United States
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**Pacific Southwest
Research Station**

Research Paper
PSW-203

Assessing Public Concern for Landscape Quality: A Potential Model to Identify Visual Thresholds

Arthur W. Magill

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Considerable public criticism and sometimes legal obstructions have been directed toward landscape management in relation to the extraction of natural resources. Many managers do not understand public concerns for visually attractive resources. Managers need to know when landscape alterations, like clearcuts, attract public attention and become visually objectionable. A study assessed the opinions of groups of people, representing various organizations, using color slides to simulate views of managed and natural landscapes. Of 63 management actions, 43 were not detected by more than half of the people. Only 31 percent of the management actions were reported by 50 percent or more of the respondents, and large, near actions were not reported any more frequently than small ones. A model was prepared to identify visual thresholds where people might first detect an action without knowing what they were seeing, and finally receive enough information for them to identify the action. Small numbers of respondents detected management actions and fewer identified them, but their responses demonstrated the existence of detection and identification thresholds as well as concern for the environment.

Retrieval Terms: landscape management, public concern, resource management, sensitivity levels, visual impacts, visual thresholds

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Natural resource managers have long managed landscapes under the critical eye of the public, often with frustrating consequences. Long-established methods for extracting resources or developing facilities are frequently met with vocal objections if not legal obstructions, because managers fail to consider the visual consequences of their actions. In essence, managers need to know when and where landscape alterations such as clearcuts, road cuts and fills, mine tailings, or microwave stations may attract attention, become visually objectionable and arouse public concern. Knowledge of visual sensitivity in relation to viewing distance, size of object seen, and stage of revegetation is not presently available to resource managers.

The concept of thresholds refers to the least amount of information needed to accomplish a perceptual task. A detection threshold is the point at which something is first detected by an observer, but not enough information is available for identification. As observation continues, a distance is reached where new information is sufficient to permit identification--an identification threshold. Detection or identification of specific objects may be achieved more rapidly and with less information as the interest, education, and experience of people increase.

I hypothesized that detection and identification thresholds could be identified by showing people color slides of landscape scenes. Therefore, a study was done to identify thresholds by showing people pictures of objects frequently seen in natural and managed landscapes, such as waterfalls, roads, lakes, meadows, microwave stations, timber harvesting, mining, or revegetation on manipulated areas. The objectives were to determine the following: (1) distances at which subjects of a known size could be detected and identified, (2) when plant growth was sufficient to prevent detection and identification, (3) whether people liked or disliked what they saw, and (4) opinions of management intensity and quality.

Color slide sets of various landscape components, structures, and management actions, from the western States, were obtained at different focal lengths to simulate seeing an object from different distances without changing its form or real size. Eight slide shows, of 30 slides each, were shown to 41 different groups. Viewers completed a questionnaire by describing the first two objects, in order of personal preference, that attracted their attention in each slide; their like or dislike of the scene; and whether the area viewed was managed and how well managed.

A majority of respondents did not detect or identify most of the management subjects shown. Fifty percent or more did not detect the consequences of 43 of 63 management actions even when they were obvious. Only 2 management actions were identified and 7 detected by more than 50 percent of the respondents. Large objects were not reported any more frequently than small objects; however, small numbers of people were able to detect or identify objects regardless of their size or the viewing distance. Most managed areas were perceived as being managed, and most of the management was regarded as fair to well done. Perceptions of management were uniformly distributed from low to intensive. All managed sites were seen as unmanaged by some people, and all management was perceived as devastating by a few people.

All of the natural areas were detected by 72 percent or more of the respondents, who had mentioned seeing a natural feature such as trees, mountains, or streams and had not mentioned any man-made objects or actions such as roads, mines, or cuttings. Furthermore, the respondents also liked the natural views they had detected. Nevertheless, a majority of the people, who responded to questions about management intensity and quailty, thought the natural areas were managed and that the quality of management was good. Some people were indifferent to views of unmanaged landscapes and others disliked them. However, the data provided no explanations about opinions in relation to natural scenes.

Visual thresholds were identified by the method used in this study. However, identification was dependent upon a small population of people who were visually sensitive to natural and man-made elements in landscape views. Thus, the model might be used to develop a classification of public concern for scenic quality, for individuals who are less visually sensitive, provided a range of object sizes in relation to view distances can be devel-oped for specific management actions. And, despite most people not detecting or identifying management, managers are well advised not to assume respondents did not see any management. Furthermore, while most respondents thought management was fairly good, that may not equate to a manager's opinion of fairly good. The general public may use different criteria to evaluate landscapes and management than do trained land managers.

Introduction

Natural resource managers have long managed landscapes under the critical eye of the public. Traditional methods for extracting resources, developing facilities, or building access routes are increasingly met with vocal objections and legal obstructions. Reasons for criticism and opposition are many including these: inadequate knowledge by managers about the visual consequences of their actions; lack of alternatives to satisfy public demands and legal requirements; and inadequate knowledge of various publics and their perceptions, expectations, concerns, and even demands for managing resources within visual constraints.

Past efforts to resolve the difficulties resulted in the development of the Visual Management System (VMS) by the For est Service and Visual Resource Management (VRM) by the Bureau of Land Management (USDA, Forest Service 1974; USDI, Bureau of Land Management 1975). Both represent efforts to systematically identify and classify scenic quality to permit sound natural resource management within visual constraints specified as visual quality objectives (VMS) or visual resource management classes (VRM). A serious concern with both systems rests with the use of visual sensitivity levels, which are purported to be a measure or index of public "concern" for the scenic quality of landscapes.

Forest Service landscape architects are the professionals responsible for applying the VMS. Although they had considerable confidence in the system, they were found to seriously doubt the ability of the sensitivity levels to accurately measure public concern (Laughlin and Garcia 1986). Visual sensitivity, for both systems, is determined by managers on the basis of how frequently the public uses primary and secondary travel routes, and on the assumption that they have a major or minor concern for esthetics. Actual concern of the public has not been measured; it is assumed on the basis of the public's presence and activities along primary and secondary travel routes coupled to a value judgment that they have a major or minor concern for esthetics.

Natural resource managers need to increase their knowledge of the public's perceptual sensitivity to landscape esthetics and, most important, how management actions influence the sensitivity. In addition, they need to know when sensitivity is reduced as the consequences of management are muted by natural or man-induced vegetative succession or other rehabilitation processes. In essence, managers need to know when and where landscape alterations such as clearcuts, road cuts and fills, mine tailings, or microwave stations may attract attention, become visually objectionable, and arouse public concern. Moreover, they need to know when vegetative growth has progressed sufficiently or soils and rock surfaces have aged enough to hide otherwise objectionable landscape alterations, that is, they no longer attract attention and arouse concern.

Information about the public's visual sensitivity with relation to viewing distance, size of object seen, and stage of revegetation is not presently available to resource managers. Most recognize the need. Having such information would allow managers to predict when planned actions would lead to public objections, allow them time to develop alternative actions or prepare acceptable explanations of their actions, and permit them to let the public know how long the consequences of actions may persist.

This paper reports on an exploratory study that investigated the stated concerns people had about a series of selected landscapes. The study evaluated the perceptions groups had of different management actions portrayed in color slides. Management actions were illustrated in a manner that permitted them to be viewed from simulated distances without altering the angle of view. This procedure was designed to permit determination of the distance at which people might detect or recognize the management actions.

Crossing Visual Thresholds

The probability for detecting visual misfits (features not typical of the landscape) should increase as the heterogeneity of a landscape decreases and provided it is not flat. Detection in a forested landscape is unlikely when it is flat, except from the air or from other elevated positions. Obvious anomalies, such as roads, clearcuts, or powerline right-of-ways, in a densely forested landscape should be evident, because the forest provides "background" for the various clearings or "figures" with their distinctive "borders."

A "figure-ground separation" is established when a "continuous background surface" exists against which an object, form, or "figure" can be seen (Dember 1960; Gibson 1950; Vernon 1968). The most important feature in such a relationship has been attributed to the border (Dember 1960). Thus, as a landscape becomes more heterogeneous, the opportunity to detect visual misfits is likely to decrease because more objects with more borders will reduce the background effect. For example, irregularly shaped cuttings are less evident where irregular openings are already present in the landscape. At some point, the forest may no longer be recognized as background; it then becomes figure and the openings are background. The importance of borders may diminish, however, when scenes are considered in the context of real landscapes rather than labora-

tory drawings or photographs. The reason is that object repetition, exposure time, and other visual clues tend to influence perceptions when people view real landscapes.

Change in figure-ground separation may have been detected when objections are raised concerning the effect of management actions on the visual environment. However, discrimination of objects or figures in the landscape has led to conflicting reports. For example, R. Kaplan (1979) stated that as an area becomes "home" or more familiar to people, they tend to differentiate figures that previously blended with the background. Furthermore, Penning-Rowsell (1979) noted that lifelong residents of an area developed a familiarity that tended to breed contempt for the familiar scenes.

Tuan (1974) countered that the same familiarity could lead to an affection for the area when it did not breed contempt. Obviously, clarification is needed for this aspect of perceptions of the environment. Residents of an area tended to block-out unpleasant aspects of the landscape or became oblivious to the beautiful (Tuan 1974). Additionally, Vernon (1968, p. 172) said that we see "many things and many aspects of the visual field without directing our attention upon them." She even suggested that without being educated about things, we may not or even can not see them! On the other hand, recognition may only be delayed because traces of previous conditions or situations may temporarily block recognition (Koffka 1963). For as Castaneda (1971) has expressed it: "Things don't change, you change your way of looking."

Various thresholds exist at which only minimal information is needed to accomplish a perceptual task (Dember 1960). People may be aware of change but not actually know what changed, in what manner, or how much it changed. The concept of thresholds, as used in psychology, is the "minimal amount of information required for the accomplishment of a perceptual task" (Dember 1960).

A detection threshold marks that point at which something is first detected by an observer, but without recognition--something is seen but not enough information is transmitted to allow it to be identified. A detection threshold involves some degree of change, no matter how small. In fact, people are likely to overlook things that are relatively uninteresting or unimportant to them, unless they actually see movement or change (Vernon 1968).

Dember indicated that our perceptual system is not only responsive to change, but to its opposite-constancy or equality. Essentially, not only are we attracted by changes in the landscape, but also by monotony. Possibly sheer boredom causes visual attraction, or distraction, as we view an unchanging and seemingly endless landscape.

As we continue to observe a landscape, we are likely to gain more information. Eventually, a point is reached where enough new information is gained to permit recognition or identification of the object that was originally detected but not recognized or identified. If a standard was provided to aid discrimination (an observer is told that a management action is present), then a **recognition threshold** is achieved-a point at which minimal information is available to permit recognition by comparison with the provided standard. When a standard is not provided (observer is not told that a management action is present), the observer must provide the comparative standard, and an **identification threshold** is defined. Clearly, an **uninformed observer** (for whom no standard is provided) would need to be nearer to a management action to identify it than would an informed observer. However, detection, recognition, or identification of specific objects or actions may be achieved more rapidly and with less information by persons with sufficient interest, education, and experience.

Thresholds, as used in psychology, were applied under laboratory conditions where subjects identified messages of varying light intensity flashed on a movie screen (Dember 1960). The present study and others were done under less controlled conditions. Detection and recognition thresholds were used by **trained observers** (persons whose observational skills have been enhanced by specialized knowledge and experience) to determine how the visibility of transmission lines was influenced by tower type, corridor width, landscape setting, and viewing distance (Driscoll and others 1976).

Stages of vegetative development may be identifiable at which observers can no longer determine what an object is or what caused a change (loss of identification threshold) and at which detection no longer occurs (loss of detection threshold). Jointly, these stages of plant succession when growth is sufficient to screen objects or mask changes were called **recovery-time thresholds.** At some recovery stage, people will not recognize or detect that which previously was evident.

Interest in how people behave after achieving an identification threshold suggested the existence of a third visually stimulated threshold. As people gain more information about the identification threshold, they may eventually react, in some manner, to the new data. At that point, sufficient new visual information may be available, in conjunction with the individual's education and experience, to establish a **reaction threshold** or point at which the visual influence is sufficient to cause the viewer to respond to what was seen in some emotive manner.

If the scene is disliked, the observer may take action, such as writing a congressman or joining a special interest group. This reaction threshold may be similar to the "threshold of disruption" or the point where some management action is sufficiently severe to make people stop visiting favorite sites or substitute a current preferred activity with some other activity (Clark 1983). On the other hand, an observer who likes the scene may simply continue a present activity or even express support for a land management agency by writing a complimentary letter. However, the latter is unlikely, because satisfied people are more likely to be complacent and not react.

I hypothesized that detection and identification thresholds might be identified by showing color slides of landscape scenes to untrained and uninformed observers. Scenes included natural landscape components such as waterfalls, rock outcrops, lakes, or trees, and man-made objects such as roads, dams, microwave stations, or timber cuts. Thus, detection thresholds may exist whenever an attention-getting object can just be detected but not identified.

I further hypothesized that detection thresholds may be defined by some unique combination of object size and distance from the observer in conjunction with variations in color, texture, and intensity of edge effect. Additional combinations were expected to provide sufficient new information to permit determination of identification thresholds.

Developing a Threshold Meaning Model

Carl Jung's concept of the word *meaning* moved people from searching for causal relationships to searching for "connections" to explain phenomena (Franz 1964). Lynch (1960, p. 6) applied this concept to landscapes as he observed that "the environment suggests distinctions and relations" while we select, organize, and endow it with meaning. Instead of asking, "Why did something happen?", Jung asked, "What did it happen for?" Dember (1960) used a similar approach, not so much in search of meaning, but to define the "detection task" as "a reaction to change" of message intensity by asking, "Did something happen on the screen?"

Applying the concept of meaning, Lee (1976) suggested that people tend to search for meaning in landscapes just as they do in works of art. After the fashion of Jung (1964) and Dember (1960), he suggested that people judge landscapes by asking, unconsciously, the basic questions: "What is going on here?" "What made the forest look this way?" The concept of "legibility," as defined for cities, referred to the ease with which inhabitants recognized city parts and organized them into coherent patterns (Lynch 1960). Lee applied the concept to wildlands in claiming that people assign meaning in terms of landscape legibility or what they can decipher about a landscape by observing its features and, I would add, management impacts on those features *(fig. 1)*.

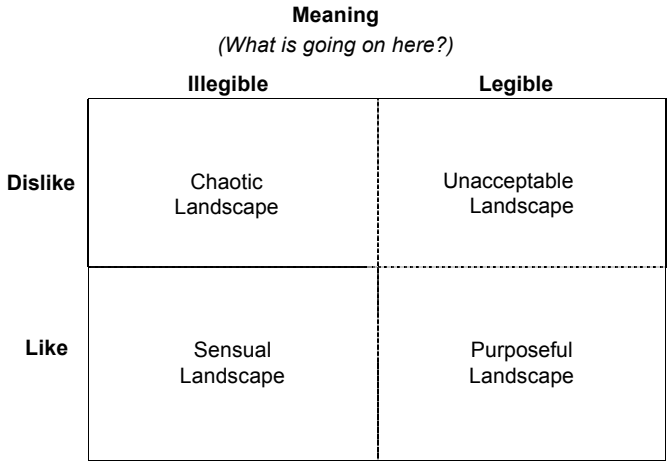


Figure 1-Landscape meaning model (after Lee 1976).

Examining the model, we see that if people dislike a scene and cannot answer the question, the landscape is considered illegible and termed "chaotic." But, if they know what's happening, then the landscape is legible and said to be "unacceptable." However, should the viewers like a scene, though not understand it (illegible), the landscape is considered "sensual," while understanding the landscape makes it "purposeful."

In reviewing Lee's work, it appeared that detectable levels of change or "thresholds" might be found before the points indicated by illegible and legible in his model *(fig. 1)*. If so, a more comprehensive model might be described. In the study reported here, I searched for visually detectable levels of change in a range of views of natural and managed landscapes which may represent the environmental concerns of people belonging to different interest groups. Their concerns may be related to the meanings people assign to landscape components and management actions.

The expanded model is shown in *figure 2* with all additions and revisions highlighted. *Meaning* has been replaced by *threshold definition* because that was the meaning sought. The question was changed to determine if critical elements (management actions or objects) were located or identified. Detection and identification thresholds define certain points at which critical elements in the landscape may be detected and then identified. Hence, a category "detected" for illegible landscapes and "identified" for legible landscapes.

Critical elements are those objects in the landscape (natural or man-made) which, for whatever reason, attract an observer's attention. And, if they are identified, it is likely they evoked the essence of themselves in the memories of persons viewing them (Kaplan, S. 1975). For the purpose of this study, critical elements were any natural landscape component of an unmanaged (natural) landscape and objects or actions in a managed landscape such as timber harvesting, mining, roads, microwave towers, or buildings that were important to an observer. People's responses to critical management elements were tested in the study.

The model shows the detection threshold before the detected landscapes, and the identification threshold between the detected and identified landscapes. In addition, a reaction threshold may exist at a higher level of identification. People may receive sufficient information, above the identification threshold, to stimulate strong positive or negative behavior, thus the category, reaction, was created. Observer reactions to landscapes may vary according to their approval or disapproval of specific landscapes. Landscapes that are liked have been called "commendable," and those that are disliked are "censurable." The study did not identify any reaction thresholds, because it would have been necessary to identify actual behavior after critical elements had been identified by respondents. The study was designed to evaluate public concern for visually detected environmental impacts, not human behavior in response to the impacts.

People may be unconsciously attracted by critical elements that are below the detection threshold. That is, they may look at an element but not see it; their awareness of an element may be

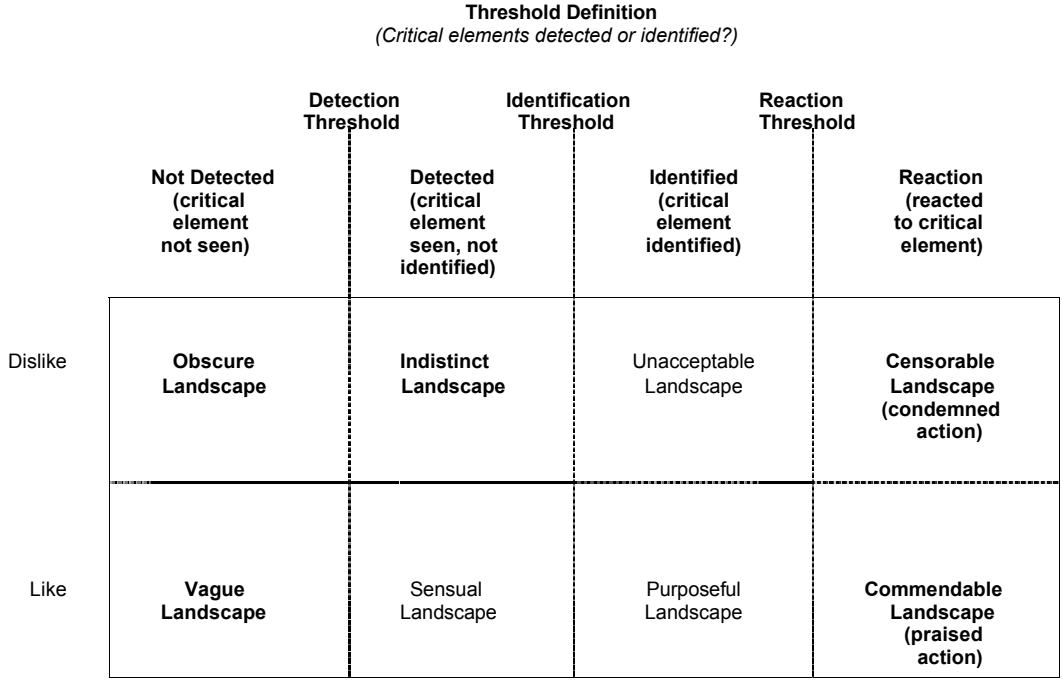


Figure 2-Visual threshold meaning model.

too low to permit positive detection. Yet, the presence of such an object may stimulate an unaccountable like or dislike by some people. Unfortunately, it was not possible to measure such attractions by the methods used. On the other hand, some people may be attracted by and report elements that are stimulating and important to them, but not critical to the purpose of the study. With this in mind, the category **not detected** was created to classify landscapes for which people had detected other than the critical elements. Whenever critical elements were not detected, landscapes that were disliked were designated "obscure" and the liked landscapes were termed "vague."

The study reported here was started in 1982 to determine if any of the thresholds could be identified by showing people pictures of natural and managed landscapes, such as waterfalls, roads, lakes, microwave stations, timber harvesting, meadows, mining, or revegetation on manipulated areas. Objectives of the study were to identify the following:

(1) distances at which subjects of a known size could be detected (detection threshold) and identified (identification threshold);

(2) length of time after which the subjects could no longer be identified and no longer detected, as plant growth screened or muted the original impacts;

(3) whether people liked or disliked what they saw;

(4) whether they thought the areas viewed were managed; and

(5) opinions on the quality of management.

Methods

Color slide sets of various landscape components, structures, and management actions were obtained throughout the western States *(App. A)*. A slide set represented a specific subject photographed from a fixed position using different focal lengths ranging from 28 millimeters up to 300 millimeters. Subjects, as they appeared to the unaided eye, were depicted by 50 millimeter slides.

The seen-area or actual size of a natural landscape feature or consequence of management was constant for each set, and it was measured on a slide of 200 millimeter focal length. The apparent or visual size of the subjects changed as focal lengths increased or decreased from 50 millimeters *(fig. 3)*. The reason for photographing the subjects at different focal lengths was to simulate their appearance at different distances while controlling configurations and seen-areas. Had the subjects been photographed from different locations to achieve the progression of distances, the same subject would have had a different configuration and a different area would be seen from each location.

Photographs, slides, and prints, commonly have been used to conduct scenic quality research. The simulation is not the same as having a respondent view the actual scene; however, it is a practical, economic, and reliable surrogate for on-site viewing (Zube and others 1987). In addition, changing camera focal length to simulate the same view from different distances is not

Figure 3-Philadelphia Canyon gold mine as photographed from: (A) 4.8 miles (7.7 km), camera focal length 50 millimeters; (B) 3.4 miles (5.5 km), camera focal length 70 millimeters; (C) 2.4 miles (3.9 km), camera focal length 100 millimeters; (D) 1.6 miles (2.6 km), camera focal length 150 millimeters.

the same as photographing the scene by moving progressively nearer. Foreground information will change as the focal length is changed, but so too will the foreground change as one moves forward to repeat a photograph from a nearer location. Obtaining photographs by moving forward is relatively simple where the topography is level and vegetation is low, but locational difficulties are likely to arise even under such favorable conditions. On the other hand, extreme variations in relief, especially coupled with tall, dense forests, makes such photography nearly impossible. Thus, the simulated procedure was used while recognizing its limitation for the most accurate portrayal of landscapes. Later, I provide an example that evaluates scenes where the skyline is lost due to photographic magnification.

I made no effort to adjust for weather or atmospheric conditions, thinking that conditions as actually experienced would more nearly approximate those experienced by visitors to the landscapes that were simulated. In retrospect, it may have been better to replicate the same scenes under various conditions to evaluate the differences. That would have necessitated limiting the number of sample sites, to permit repeat photography under different conditions. Seventy-three slide sets were randomly selected, and randomly selected substitutes replaced sets of inferior photographic quality. Depending on target distance, ranging from about half of a mile to nearly 16 miles, 1 to 6 slides were selected from each set for a total of 240 slides. Slides were randomly distributed into 8 slide shows of 30 slides each. Whenever possible, only one slide from a set was included in a show. However, when two were included, they were of such different focal lengths that respondents were unable to recognize the location. Respondents were completely unaware that the scenes they viewed were but one of a set, or that respondents saw a different picture of the same subject.

Slides were projected at a uniform size for each show by placing the projector 16 feet (4.9 m) from the 70-inch (179 cm) square screen to obtain an image of 43 by 63 inches (109 by 160 cm). A cassette tape recorder controlled the projector to obtain uniform viewing periods. Because people in the front could see detail better than those in the back of the room, group size was limited to 50 people. Nevertheless, some people sitting towards the rear probably had difficulty seeing. Any resultant bias was not measured.

Some thought the time allotted to view the slides was too little, while others thought it was too great. Pretesting had established 60 seconds as acceptable for the first 21 slides, and 90 seconds for the last 9 slides, which required two additional responses. A group of resource professionals thought the view period was good, but members of a bicycle club became restless. Therefore, I adjusted the time to allow 40 seconds for the 21 slides and 50 seconds for the last 9. On the average, the revised viewing periods proved satisfactory for most viewers. In fact, any complaints about short viewing time were ill-founded according to other studies (Kaplan, R. 1975; Herzog 1987), which found that preference judgments of natural environments were the same for very short viewing times (10-20 milliseconds) versus a much longer time (15 seconds), and increasing time provided only minor modifications to the preferences.

A questionnaire was prepared *(App. B)* to obtain the following from respondents:

- Their background
- A brief description of the two objects (clearcuts, mountains, rivers, mines, etc.), in order of importance to them, that attracted their attention in the first 21 slides
- An opinion of whether they liked or disliked the objects
- For the last 9 slides, in addition to the previous information, their perceptions of management intensity and quality for the area that contained the objects.

Telephone directories, conservation directories, and other sources were used to identify groups to serve as samples. A form letter was developed that requested participation in a questionnaire-slide show, to find out what people see when they visit or travel through mountain, forest, or desert landscapes. No additional description of the program was offered to avoid biasing responses.

At the beginning of each show, respondents were told they would see 30 slides of mountain, forest, or desert landscapes and be asked to express their opinions of the views on a questionnaire. As a consequence, they were not provided a standard against which they might assess actions depicted in the slides. Any identification of the actions would result in identification thresholds. They were also informed that the slides would be repeated, at the end of the show, so they might learn where each was taken and the purpose of the research.

It was soon evident that some responses would be useless without additional instructions. People tended to like clouds, sunsets or sunrises, silhouettes, and similar items over which land managers had no control and which are highlighted by the photographic media. Before the shows started, respondents were asked to ignore such things and comment only on land forms or objects on the land or water. Regardless, some responses ensued such as "nice place to" hunt, ski, fish, or go four-wheeling. Possibly, such statements represent the only means by which the particular respondents could relate to the environment they saw.

As Schroeder (1988) demonstrated with regard to the thoughts, feelings, and memories held by visitors to an arboretum, the words respondents used to describe what attracted their attention in each slide were of more than casual interest. In this study, a few people mentioned "lakes," "trees w/lake," or "is that a lake" when they had seen in a slide either large oval-appearing clearcuts, brushfield clearings, or a distant view of a large valley. One respondent reported a "burnt out house" to describe logging slash, and another saw "boulders" which were actually piles of brush in a clearing. Parallel mine exploration roads that extended across a desert landscape were described by a couple of people as "looks like big football field" and as "walk ways through plants." The square ski area, on Mount Hood, was seen by some as a "snow meadow," and mine tailings on the side of a mountain as "patchy holes in mtn." Several respondents referred to managed areas as "natural setting," "untouched land," "natural land," or "nature impact only." Some of the statements told us that respondents had detected management, but were not cognizant of what they saw, e.g., the boulders, snow meadow, and football field. Other words simply demonstrated that people may misinterpret the landscape, may not be able to identify landscape components or management actions, or simply could not articulate what was seen. However, these statements were from a minority of respondents.

The slide shows ranged from wide-angle views with vast landscapes having expansive sky and targets at considerable distance, to telephoto views with shortened distances to targets, limited horizontal scope, and little or no sky visible. Some people argued, justifiably, that if they had been in the field they would have seen more and had a different opinion of the scenes. The argument relates primarily to telephoto views, which may have seemed unrealistic to the respondents. One respondent felt that such views deprived him of essential foreground influences that would have influenced the context of the scene and his opinion. However, it is frequently possible to find views in the field which are just as restrictive as those presented. People tend to forget seeing such scenes, but I contend there are numerous "windows" or views of restricted scope, which result from the presence of trees, nearness to large rocks, or the presence of buildings, as well as the influence of inferior locations (views looking up). Views may be narrowed and shortened by trees such that one has the impresssion of looking through a porthole or down an alley. In such a case, no sky may be evident and only a forest or mountainside may be visible. Similarly, in deep canyons one sees canyon walls and some sky, provided one looks straight up.

Some people were critical when no sky could be seen, but not having sky in a view is not necessarily detrimental:

Location	Distance *miles*	Liked *percent*
Apache Canyon		
No sky	1.2	82
No sky	2.1	64
Sky	2.9	59
Lone Tree mines		
No sky	1.6	38
No sky	2.7	83
Sky	3.8	81
Pine Creek tailings		
No sky	0.5	69
Sky	1.0	89
Pickel Meadow buildings		
No sky	1.3	80
Sky	2.4	82

In the Lone Tree mine scene, it was erosion and bare areas that were disliked, not a lack of sky. Similarly, the perceptions of bare areas, erosion, and roads were disliked in the Pine Creek view, not the lack of sky.

Respondents sometimes complained about too much light on the screen. Some light was necessary during the shows to permit people to respond on the questionnaires. The ideal situation was to have no external light sources and a dimmer to control room lighting. Most respondents had no difficulty seeing the slides or reading the questionnaires under such conditions. Regardless, there were times when external lighting made viewing difficult. The amount of bias introduced was unknown.

Response rates for surveys concerned with outdoor recreation on wildlands have ranged from 70 to 90 percent, and even over 99 percent for personal interviews. Such rates far exceed responses associated with most commodity oriented questionnaire surveys. With this in mind, a high response was expected to the flurry of letters offering to present a show. Unfortunately, after mailing about 175 letters, only 43 groups expressed interest in seeing a show, and 41 actually saw one. Nevertheless, 788 usable questionnaires were obtained.

Results

Detection of Management

A majority of respondents did not detect, let alone identify most of the management subjects shown in the slides. Fifty percent or more of the respondents did not detect the consequences of 43 of 63 management actions even when they were obvious. Only 2 management actions were identified and 7 were detected by more than 50 percent of the respondents. Ignoring the identification of visual thresholds, only 32 percent of the management actions were detected (detection plus identification) by more than 50 percent of the people.

Large objects were not reported any more frequently than small objects, however small numbers of people were able to detect or identify objects regardless of their size or the viewing distance. In general, people who did not detect management actions reported seeing forests, trees, mountains, mountain peaks, hills, and other very broad descriptors of landscape scenes. This does not mean they did not see the management, only that it was not as interesting or important to them as at least two other objects in the scenes. Objects that are of marginal interest to people tend to be seen peripherally, because attention may be focused on things having greater interest or importance for them (Vernon 1968). Apparently, most respondents were more interested in and assigned more importance to natural landscape elements, to the exclusion of management actions as reportable events.

People concentrate their attention and make quick, accurate perceptions when observation time is limited (Vernon 1968; Herzog 1987; Kaplan, S. 1987). Yet, some obvious management actions did not attract attention, while some minor actions were overlooked in the presence of powerful natural features. People expect to see certain things in specific situations (Vernon 1968); however, at those times, not everything within view necessarily will be seen. Even though their attention may have been focused, in response to the limited viewing time, their expectation to see natural components (trees, mountains, etc.) in a wildland situation may have been met. If matched expectations were stronger than the influence of concentrated attention, they may have prevented respondents from reporting management actions portrayed in the slides.

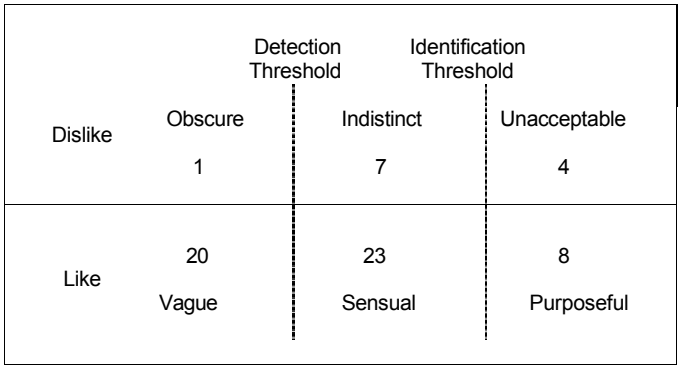
Determining Visual Thresholds

Visual thresholds were identified and located within the context of the threshold meaning model. However, identification was dependent upon the visual sensitivity of a few people to natural and man-made elements in landscape views. Only seven management actions were detected or identified by more than half of the respondents. A utility tower was identified at about half a mile by 59 percent and was disliked, which defined an unacceptable landscape. Three other unacceptable landscapes were detected. Some partial cuts were seen by 77 percent of the people at half a mile, regenerating clearcuts by 76 percent at just over 2 miles, and thinnings in a regenerating burn were detected by 56 percent at just under half a mile. Three landscapes were liked by those who detected them. Some clearcuts were detected by 60 percent of the respondents at 2.2 miles, a brush clearing by 58 percent at just under a mile, and a ski area was detected by 52 percent at slightly over 5 miles.

Detection and identification thresholds were identified for other landscapes by not more than 48 percent of the respondents for any given management action. Landscapes with identified critical elements were legible (unacceptable or purposeful), landscapes with critical elements detected but not identified were illegible (indistinct or sensual), and landscapes with undetected

critical elements were indiscernible (obscure or vague). The 63 managed landscapes were distributed in the visual threshold meaning model in the pattern shown in *figure 4*.

Essentially, the people who did not detect critical elements saw landscapes as a mosaic of components or actions. They reported seeing lakes, mountains, meadows, hills, rivers, valleys, forests, or deserts. They also said they saw various patterns, colors, or textures; arid, barren, vegetated, or enclosed or expansive areas; or smoggy or hazy atmospheric conditions. Some reported seeing human influences, however, they were not a critical element for the specific scene.



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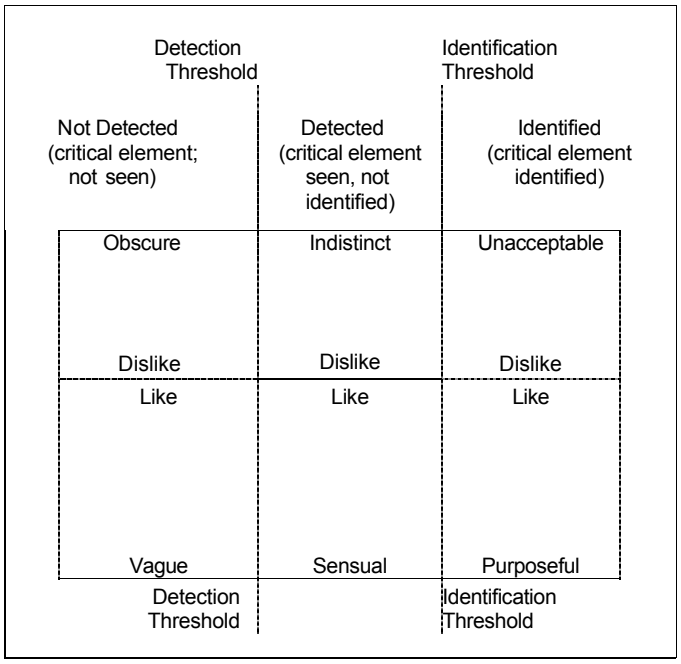


B

Figure 4-Distribution in the visual threshold meaning model of the managed landscapes that were studied.

Perception of Management Intensity and Quality

Most managed areas were perceived as being managed: from 55 to 94 percent of respondents perceived 31 of 32 managed landscapes as managed. Or, 70 percent or more of them perceived management for 69 percent of the managed landscapes. Fifty percent or more of the responses provided the following perceptions of management intensity and quality:

- Intensity was considered low to moderate for 62 percent of the areas while quality was fair to well done on 66 percent.
- Intensity was fair to high and quality fair to well done on 56 percent of the areas.
- Intensity was fair to high and quality poor to devastating for only 9 percent of the landscapes.

All managed sites were seen as unmanaged by some people, and all management was perceived as devastating by a few people. Overall, people did perceive the study areas as managed but were not negatively influenced by the management.

Detection of Natural Areas

All of the natural areas were "indirectly" detected by 72 percent or more of the respondents, who had mentioned seeing natural features such as trees, mountains, or streams and had not mentioned any made objects or actions such as roads, mines, or cuttings. Furthermore, people liked the natural views they had detected. Thresholds were identified for three scenes: 44 percent identified a waterfall, 24 percent identified an unmanaged forest, and 91 percent detected a dry river channel.

Nevertheless, a majority of the people who responded to questions about management intensity and quality thought the natural areas were managed, and they thought the quality of management was good. Essentially, 50 to 76 percent of the respondents thought five of six natural areas were managed when seen from the nearest distance sampled. The waterfall scene was the only natural view to be regarded as "unmanaged" by more than 50 percent of the respondents.

People search for meaning in landscapes, and their preferences are couched in their knowledge and personal standards (Lee 1976). A few people disliked some "unmanaged" or natural areas, and others were indifferent to them. Some components of natural landscapes may have projected images of management and consequential negative connotations for persons who detected natural objects but did not like them. Possibly, the landscapes simply did not meet their standards for scenic quality. Regardless, the study provided no specific explanations of why a few people liked or disliked some natural scenes.

Several natural scenes contained landscape elements thought to resemble management actions. Few people failed to distinguish the areas as natural, but the results suggest that strongly defined landscape elements, such as the bright white, linear riverbed at Apache Canyon could be misinterpreted as a management action. On the other hand, poorly defined features, such as the outcrop in the Funeral Range and the lava flows at Craters of the Moon, are unlikely to be interpreted as manage-

ment. "Hard" or strongly defined edges may signify "man-made" areas whereas "fuzzy" or poorly defined edges may be misconstrued as natural (Palmer 1989).

Discussion

Identification of detection and recognition thresholds was possible, but generally only a few respondents were capable of discriminating the objects representative of management actions. Most people perceived landscapes as a mosaic of trees, shrubs, hills, mountains, and similar features. In the following pages, I describe the respondents and discuss the identification of thresholds, frequency of detection, opinions of naturalness, and perceptions of large objects. I also describe how the results may be applied to the visual threshold meaning model, perceptions of management intensity and quality, and perceptions of natural areas. Finally, implications for management are briefly discussed.

Despite efforts to obtain a heterogeneous sample of people, 70 percent of the respondents were professionals, technically trained persons, or retired persons, and 80 percent had attended 1 or more years of college *(App. C)*. Seventy-three percent had annual incomes of $25,000 or more and 29 percent, $50,000 or more. Two thirds were male, and most recreated on wildland areas 3 to 10 times per year. The majority had spent most of their lives as suburban residents of the Pacific Coast states, primarily California.

I had planned to use the socioeconomic information about respondents to explain some of their perceptions. I particularly expected to use the information on membership in professional, conservation, and recreation-oriented organizations. However, the data did not support this use even though 49 percent of the respondents belonged to conservation groups (Sierra Club, Audubon Society, Wilderness Society, local environmentally oriented groups, etc.), 11 percent belonged to professional organizations (most environmentally oriented), 2 percent represented industrial groups, and the remainder were unaffiliated *(App. C)*. In a very few cases, some anomalies in the responses were explained by such data. Nevertheless, the inability of social characteristics to explain a significant amount of the reaction to the simulated scenes was rather surprising, considering that others have used socioeconomic data to explain visitor reaction to the environment (Daniel and Boster 1976; Hampe 1988; Palmer and others 1988; Thayer and Freeman 1987).

Detection and Identification of Management

Detection and Identification Thresholds

Detection and identification thresholds were defined, for managed or natural landscapes, when differences of 10 percent or more existed for observations at sequential distances. Though thresholds were defined by the 10 percent criterion, thresholds were not deemed important unless at least 50 percent or more of the respondents reported the critical element as one of the two objects seen in a view simulation (Palmer 1989). In the event that an identification threshold was defined after locating a detection threshold, the more distant detection threshold was used to place the subject in the model. Thus, subjects were recorded only once.

Detection thresholds also were recorded if significant differences were found, at sequential distances, by combining nonsignificant detection and identification values. This combination was possible because detection is a prerequisite of identification. However, identification thresholds were not defined by combinations, because detection does not necessarily lead to identification. Responses were not combined to assess opinions when identification thresholds were found, because such combinations would result in double counting of responses by those able to identify critical elements. When detection thresholds were defined by combining values, they have been identified as combined detection.

For example, some parallel mining exploration roads in the desert were detected (but not identified) by 9 percent of the respondents at a distance of 1.8 miles, while 4 percent detected them at 2.2 miles. The roads were identified by 10 percent of the respondents at 1.8 miles, while only 1 percent identified them at 2.2 miles. Neither for detection nor recognition did the percentage of respondents differ between distances by at least 10 percent. Therefore a threshold was not identified:

Roads *(miles [km])*	Detected	Identified	Detected plus Identified
		percent	
1.1 (1.8)	31	29	60
1.6 (2.6)	25	12	37
1.8 (2.9)	9	10	19
2.2 (3.5)	4	1	5

Dashed horizontal lines indicate thresholds.

However, by adding the identification values to the detection values at 1.8 miles and at 2.2 miles, the difference of 14 percent defined a detection threshold between the two distances. The same example displays an uncombined detection threshold at 1.6 miles, where 25 percent saw the roads, and an identification threshold for 29 percent of the respondents at 1.1 miles.

On occasion, some foreground objects detracted from the intent of the photographs, and resulted in erroneous responses by the viewers. For example, when a natural forest in Idaho was viewed from a little more than 4 miles, a highway was visible. Respondents mentioned the road, and consequently a detection threshold was defined between 3 (4.8 km) and 4.3 miles (6.9 km). The presence of the road resulted in fewer reports of natural elements, which led to a spurious conclusion. During the analysis, the slides were reexamined, and the problem was revealed. A corrected determination revealed that there was no threshold.

In another case, a clearcut was the subject of the photograph, but a second cut appeared in the foreground of a wide-angle view. Since 78 percent detected the cut at 1.7 miles (2.7 km) whereas 63 percent did at 1 mile (1.6 km), a "reverse" detection threshold seemed to have existed. Normally, the detection of critical elements and the identification of thresholds should increase with increasing nearness to subjects. In this situation, the opposite happened, including an increase in dislike from 16 to 23 percent. I concluded that the foreground clearcut was the cause of the spurious responses. Both cases show the need for determining what had been seen to avoid assigning a nonexistent threshold.

Thresholds were not well defined by a majority of respondents for most of the management actions depicted in the slides. Only a few people who viewed a specific show detected or identified subjects, whereas the majority saw other things---even when subjects were obvious. This result did not correspond with the detection and identification thresholds reported by Dember (1960) under controlled laboratory conditions. His respondents had very definitive subjects to perceive or sounds to detect, whereas respondents in this study had a rich assortment of items to view. Consequently, they could be expected to detect or identify those things that were interesting or meaningful to them, as Vernon (1968) indicated. If the study subjects were not meaningful to them, they did not see them, and reported items of interest. For example, people might have seen young trees, but reported only trees. However, reporting "young trees" would have indicated regeneration had been detected. Since only "trees" was reported, then trees were meaningful and seen by the respondents who were not credited with detecting the subject.

Detection of a natural area required slightly different criteria than did detection of a management action. For example, respondents who saw a clearcut might have reported a "clearing," "opening," or "field," or used a similar descriptor without specifying a clearcut. In such cases, a clearcut was only detected. If the respondent had reported "clearcut," "block cut," "clean cut," or similar descriptor, then the clearcut was identified. In the case of natural areas, detection properly might be termed *indirect detection* to indicate that respondents had seen natural landscape features such as trees, flowers, mountains, streams, and hills, and said nothing about any human actions or made objects. Therefore, I assumed the respondents were unaware of seeing a natural area, but were credited with detecting one for having reported only natural landscape components.

Frequency of Detection and Identification

In only 20 of 63 management actions (subjects) were detection thresholds (detection plus identification) determined by more than 50 percent of the respondents at the nearest viewing distances *(table 1)*. Of those management actions, only a utility tower and a ski area had an identification threshold for more than 50 percent of the people, and 7 subjects had detection thresholds above 50 percent. A majority of respondents did not detect, let alone identify most of the management subjects shown in the slides. Of 63 management actions, 43 were not actually reported by 50 percent or more of the respondents as either of the two most important subjects they saw:

Subjects Not Detected	Percent of Respondents
5	90
16	80
28	70
39	60
43	50

In general, people who did not detect management actions reported seeing forests, trees, mountains, mountain peaks, hills, and other broadly described landscape scenes.

At the other extreme, all of the natural areas were indirectly detected by 72 percent or more of the respondents. Two natural sites, Sardine Falls and Reynolds Creek, had identification thresholds at less than 1 mile for a small percentage of respondents *(table 2)*. The dry riverbed in Apache Canyon had a detection threshold at 5 miles. At Sardine Falls, 14 percent identified the area as "natural" at 1 mile, whereas 44 percent identified it at half a mile *(table 2)*. Only 2 percent of the respondents said the Reynolds Creek area was natural when viewed at 1 mile, whereas 24 percent of the respondents thought so at 0.6 of a mile. Detection, in that only natural features were reported, was 65 percent at 7.1 miles at Apache Canyon, but it increased to 90 percent when the area was seen from 5 miles or less.

Dislike for Naturalness

As might be expected, most respondents said they liked the natural views they detected. However, some respondents were either indifferent or disliked the views of natural conditions *(table 3)*. For five of the nine natural scenes, without regard for distance, 10 to 11 percent of the respondents were indifferent and 10 to 17 percent actually disliked the view.

One might ask, what caused the respondents to be indifferent or to dislike natural scenes? There is evidence that "people search for meaning in the landscapes by attempting to decipher the information content," and they "apply their own values, knowledge and standards when judging whether they like or accept the meaning" (Lee 1976, p. 22).

Data from this study showed that some people, when viewing natural areas, saw roads and trails, timber cuttings and thinnings, mines and borrow pits, cleared areas, plantations, fuelbreaks, agriculture, powerlines and microwave towers, grazing, manipulations (in general), even buildings, and---most amazing-airports where only natural features existed. Many of the elements were disliked by the respondents, others elicited indifference, and some were even liked. Regardless, natural landscape components apparently suggested such meanings to the respondents. The same components may have caused those who did not detect any management action to be poorly im-pressed with the appearance of landscapes. Such landscapes simply may not have met their standards for scenic quality.

A more esoteric explanation might attribute the like, dislike, and indifference to individual assessments of scenic beauty. The words of Irish novelist, Margaret Wolfe Hungerford (1850-1897), "Beauty is in the eye of the beholder," were reflected by the varying opinions of respondents about the same object that

Table 1-*Management actions that were detected by 50 percent or more of the respondents, ordered by decreasing detection percent, and listed according to simulated view distance, size of subject, and threshold type and percent*

Detection plus Identification *(percent)*	Distance	Area or Length	Threshold		Subject
	miles	*acres (feet)*		*percent*	
76	2.2	24	Detection	76	Martin Creek regeneration
76	0.5	1	Identification	39	Lick Creek clearcut
68	1.1	(97)	Identification	46	La Posta satellite dish
67	0.2	<1	Identification	43	Westside Cemetery
62	0.6	(97)	Identification	59	Mendenhall powerline tower
60	2.2	10	Detection	60	Sisi Butte clearcuts
60	1.1	(360)	Identification	29	Death Valley Junction roads
59	0.8	N.A.	Detection	77	Deer Butte cuttings
59	0.8	8	Detection	33	Prather Meadow cutting
58	0.8	2	Detection	58	Siskiyou Lake brush clearing
57	1.3	7	Detection	54	Everitt Hill brush clearing
56	0.4	13	Detection	56	Sleeping Child thinning
53	1.4	(1370)	Detection	64	Frankish Peak road
53	2.0	N.A.	none		Little Guard regeneration
52	5.2	3	Identification	53	Bald Mountain Ski Area
52	0.9	(1130)	Identification	48	Aliso Canyon powerlines
50	0.5	4	Detection	46	Bad News Camp regeneration
50	3.6	25	Identification	41	Silvertip regeneration
50	1.6	4	Detection	45	Schultz Creek burn
50	1.5	6	Detection	47	Horse Mountain brush clearing

Table 2-*Thresholds were defined by some respondents for three natural areas*

Threshold	Thresholds for Natural Areas					
	Sardine Falls *miles(km)* 0.5(0.8) 1.0(1.6)		Reynolds Creek *miles(km)* 0.6(1.0) 1.0(1.6)		Apache Canyon *miles(km)* 5.0(8.0) 7.1(11.4)	
	percent					
Not-Detected	5	9	7	9	4	19
Detected	47	70	60	88	90	65
Identified	44	14	24	2	1	10

Table 3-*Respondent indifference and disliking for several natural areas that were detected*

Site	Indifferent	Dislike	Like
	average percent		
Apache Canyon Erosion	11	12	51
Craters of Moon	11	14	24
Cuyamaca Rancho	10	17	27
Funeral Range	10	13	59
Stovepipe Wells	11	10	65

attracted attention in a given landscape. For example, natural meadows perceived as "clearings," at Cuyamaca Rancho, were liked by 33 percent, disliked by 22 percent, and treated with indifference by 44 percent of those persons who reported seeing them. Furthermore, if managed landscapes are considered, regenerating cuttings at various locations were seen as meadows, lush vegetation, green areas, cuts, slashes, and gashes, and all were both liked and disliked!

Several natural scenes were included in the study (and randomly located among slides of management actions), because they contained landscape elements thought to resemble management actions. We wanted to know if people would make such distinctions. The dry riverbed at Apache Canyon resembled a road, the lava flows at Craters of the Moon looked like mine tailings, and a very light outcrop, in contrast with the darker surrounding rocks of the Funeral Range, could have been mistaken for mining *(fig. 5)*. Roads were mentioned by 46 percent of the 11 percent who were not aware that the dry riverbed in Apache Canyon was natural. Of the 5 percent unaware that the Funeral Range was natural, 22 percent thought they detected mining, and mining was reported by only 5 percent of the 11 percent that thought Craters of the Moon was not natural. Most people identified the areas as natural, but the results suggest that strongly defined landscape elements, such as the bright white, linear riverbed at Apache Canyon, could be misinterpreted by a few. On the other hand, less well-defined components, such as the outcrop and lava flows, were unlikely to be interpreted as management.

Detection of Large Objects

Large, near objects were reported no more frequently than were small objects. However, relatively small numbers of people were able to detect or identify objects regardless of their size or the viewing distance. As previously noted, the most important feature for accurate perception is the outline of an object, which creates a figure in relation to its background. Thus, the thin line of a road or powerline, especially at a distance, is less likely to be perceived than are better-defined

Figure 5-Funeral Range from a simulated 2.4 miles (3.9 km). The light outcrop near the center may appear as an unnatural disturbance to some people.

objects such as powerline towers, satellite dishes, clearcuts, buildings, or mine tailings.

Some examples may prove useful. Fifty-three percent of the respondents identified the finger-like configuration of the 2.9 acres (1.2 ha) of Bald Mountain Ski Area at 1.8 miles (2.9 km) *(fig. 6)*, whereas 88 percent of the respondents failed to detect the 11.7 acres (4.7 ha.) of the ski area at Timberline seen from 2.7 miles (4.3 km) *(fig. 7, table 4)*. And while the more distant view had a square shape, its edges were blurred by snow, which made a less well-defined "figure-ground" boundary than the edges between the forest and the shrub/grass interior of the ski runs on Bald Mountain.

In a second example, 22 percent of the viewers detected and another 46 percent identified a 97-foot (30 m) tall satellite dish beside La Posta Road, from about 1 mile, whereas only 1 percent detected and nobody identified a 155-foot (47 m) tall microwave tower on the dry hills at Poleta Creek at the same viewing distance. Even though the satellite dish was shorter, its distinctive form was perched on a hilltop. Consequently, its figure was strongly etched against the sky whereas the microwave tower, which also had a distinctive though slimmer shape, blended with the gray-brown hills that provided the background for it. In both examples, the most well-defined outlines were more easily detected and identified. Also, in both cases, if the object was detected, it was usually identified. Such identification may be attributed to familiarity with the subjects.

Applying the Threshold Meaning Model

Because most respondents did not detect management actions shown in the photographs, identification of visual thresholds was dependent upon the responses of the few who were sensitive to natural and man-made landscape components. Despite the small population of visually sensitive people, visual thresholds were identified and located within the context of the visual threshold meaning model (see *fig. 2*, page 4). *Table 5* offers a sample of subjects in relation to the model. *Appendix D* contains all of the subjects arranged in the model format.

Figure 6-The finger-like ski runs at Bald Mountain, from a simulated 1.8 miles (2.9 km), are very distinctive.

Figure 7-The square form of the ski area at Timberline, from a simulated 2.7 miles (4.3 km), tends to blend into the snowfield.

Table 4-*Detection of management actions according to size and distance from observers as ordered by decreasing subject size (acres or feet)*

Area or Length	Minimum Distance	Detection plus Identified	Detection or Identified		Not Detected	Subject
(acres)	*miles*	----------*percent*----------				
91	2.3	06	None		88	Lake Como partial cuts
35	1.0	41	Detection	36	52	Avenue of the Giants regeneration
30	1.6	16	Detection	16	79	Philadelphia Canyon mine
25	1.8	48	Identification	41	47	Silvertip regeneration
12	2.7	08	None		88	Timberline Ski Area
(feet)						
1370	0.9	64	Identification	39	33	Frankish Peak fire road
1159	1.1	44	Detection	39	51	White Mountains trails
1130	0.4	69	Identification	48	26	Aliso Canyon powerlines

Like or dislike is a reflection of the personal interest or concern people may hold for those components of a landscape that they detect or identify. People tend to detect or identify objects of personal interest and importance to them. They may overlook objects that are contemplated idly rather than attentively (Vernon 1968), nevertheless many things are seen even without focusing attention. Therefore, it is quite possible that many of the study subjects were seen, though only peripherally, and simply were not deemed sufficiently important to report. But for those subjects that were reported, the liking or disliking of them has been used as a measure of people's personal interest and concern for them. Considering *table 5* again, disliked subjects are above the center of the table and liked are below, and both are arranged by decreasing percentages from the center.

While respondents' dislike or like of either or both of the first two landscape components or management actions that they reported did not necessarily mean dislike or like of the whole landscape, I assumed this to be true for purposes of this study. Thus, judgments reported were assumed to reflect overall perceptions and judgments of a particular landscape. If a significant number of responses (10 percent or more) favored one judgment or the other, the assumption was presumed to be supported. The purpose of the study was to determine when people detected critical elements in landscapes, and their concern (like or dislike) about them. Therefore, perceptions and judgments of such elements were used to classify the landscapes.

Table 5--*Selected data applied to the Visual Threshold Meaning Model*

NOT DETECTED: (other than critical element seen	DETECTED: (critical element seen, not identified)	IDENTIFIED: (critical element identified)
OBSCURE (dislike)	INDISTINCT (dislike)	UNACCEPTABLE (dislike)
	Thinning 13 ft (4 m) 56-39 percent 0.4-0.6 mi (0.6-0.9 km) Sleeping Child	Observatory 0.8 acre (0.3 ha) 25-10 percent 3.2-4.7 mi (5.1-7.6 km) Mount Wilson
	Regenerating clearcuts 23.6 acres (9.6 ha) 76-46 percent 2.2-3.2 mi (3.5-5.1 km) Martin Creek	Fire road 1370 ft (418 m) 39-29 percent 1.9-2.7 mi (3.0-4.3 km) Frankish Peak
Regeneration * 60 percent nondetect 1.7 mi (2.7 km) Moon Pass	Partial cuts * 77-67 percent (combined) 0.5-0.8 mi (0.8-1.3 km) Deer Butte	Utility tower 97 ft (30 m) 59-18 percent 0.6-1.1 mi (0.9-1.8 km) Mendenhall Peak
OBSCURE (dislike)	INDISTINCT (dislike)	UNACCEPTABLE (dislike)
VAGUE (like)	SENSUAL (like)	PURPOSEFUL (like)
Brush clearing 1.2 acres (0.5 ha) 95 percent nondetect 2.0 mi (3.2 km) Badger Mt./Lassen	Clearcuts 10.1 acres (4.ha) 60-32 percent 2.2-3.0 mi (3.5-4.8 km) Sisi Butte	Powerlines 1130 ft (344 m) 48-15 percent 0.9-13 mi (1.4-2.1 km) Aliso Canyon
Fuelbreak 0.02 acre (.008 ha) 94 percent nondetect 0.6 ml) 1.0 km) Pinnacles	Brush clearing 2.4 acres (1.0 ha) 58-09 percent 0.8-1.6 mi (1.3-2.6 km) Siskiyou Lake	Satellite dish 97 ft (30 m) 46-18 percent 1.1-2.2 mi (1.8-2.2 km) La Posta Road
Microwave tower 155 ft (471 m 94 percent nondetect 1.0 mi (16 km) Poleta Creek	Ski Area 2.9 acres (1.2 ha) 52-31 percent (combined) 5.2-7.3 mi (8.4-11.7 km) Bald Mountain	Headstones 0.06 acre (0.02 ha) 43-02 percent 0.2-0.3 mi (0.3-0.5 km) Westside Cemetery
VAGUE (like)	SENSUAL (like)	PURPOSEFUL (like)

* signifies components for which a seen area determination was not calculated because the component filled most of the view.

An additional condition is necessary to clarify how the landscapes were rated with regard to concern for the view. Those views for which management was detected or identified were classified according to the majority opinion of those who saw the subject. Determinations of like or dislike also were made for those who had not detected the subjects, but they were not used to classify landscapes. There was an exception: the majority opinion of those not detecting was used to classify landscapes that were below the detection threshold.

Each subject in *table 5* shows, from top to bottom: what was seen, its size in acres or feet (except subjects filling the picture), the high and low percent at the threshold, the distances to the subject corresponding to the percentages, and the name of the location. The following discussions of landscapes that were identified, detected, and not detected are based on the information in *table 5*.

Identified Landscapes

Subjects listed in the identified column were those that had been identified by some respondents, that is, they knew what they were looking at. Following are some examples of landscapes that were unacceptable (identified and disliked) and some that were purposeful (identified and liked).

The latticed utility tower, rising 97 feet on Mendenhall Peak, was identified at 0.6 of a mile by 59 percent of the respondents, whereas only 18 percent identified it at 1.1 miles *(table 6)*. This clearly defined an identification threshold between 1.1 and 0.6 miles. In addition, 38 percent did not like the tower, whereas only 13 percent liked it. Thus, the landscape was classified as unacceptable on the basis of the disliked utility tower when seen at the identification threshold.

A fire road was visible for 1,370 feet along a relatively bare slope near Frankish Peak. At 2.7 miles *(fig. 8A)*, 69 percent of the respondents did not report seeing it, but 29 percent identified it *(table 6)*. At 1.9 miles (3 km), 39 percent identified it and 22 percent of them liked what they saw. But with increasing nearness *(fig. 8B),* dislike grew from 13 percent to 23 percent, while only 18 percent liked it. As a consequence, an identification threshold was defined at 1.9 miles, and the landscape was classified as unacceptable. Whenever an object was equally liked and disliked or whenever dislike grew stronger with nearness to the subject the landscape was classified as either unacceptable (identified and disliked), indistinct (detected and disliked), or obscure (not detected and disliked). The negative classifications were chosen because such landscapes are more likely to be criticized and require remedial action.

Table 6-*Percent of respondents who liked, disliked, or were indifferent to legible landscapes at specified distances*

Subject	Miles	Detected[1]			Identified[1]			Detection[2]		
		L	D	I	L	D	I	N	R	T
		percent								
Mendenhall tower	0.6	2	1	0	13	38	6	3	59	62
	1.1	0	0	0	6	9	3	0	18	18
	2.2	0	1	0	0	0	0	1	0	0
Frankish Peak fire road	0.9	8	1	0	18	23	13	9	55	64
	1.4	0	2	1	12	24	7	7	47	53
	1.9	4	2	0	22	13	4	6	39	44
	2.7	0	1	0	13	9	6	1	29	30
Mount Wilson Observatory	3.2	0	2	2	10	12	2	4	25	29
	4.7	1	0	0	7	2	1	1	10	11
	7.5	0	1	0	0	0	1	2	1	3
Aliso Canyon powerlines	0.4	2	0	0	32	20	1	2	67	69
	0.9	2	1	1	17	26	4	4	48	52
	1.3	0	1	0	6	9	1	1	15	16
	1.8	1	0	0	0	0	1	1	1	2
La Posta satellite dish	0.6	7	14	5	27	22	14	27	63	90
	1.1	9	5	6	16	16	8	22	46	68
	2.2	3	3	1	8	6	3	7	18	25
	3.7	1	1	0	1	4	0	2	5	7
Westside Cemetery	0.2	11	7	5	26	2	6	24	43	67
	0.3	2	1	0	1	1	0	3	2	5

[1]L = liked. D = disliked. I = indifferent.
[2]N = detected, not identified. R = identified. T = combined detection (N plus R)

A

B

Figure 8-Fire road near Frankish Peak (A) was not seen by 69 percent of the respondents when photographed from 2.7 miles (4.3 km); and (B) was identified and disliked by increasing numbers of respondents from a simulated 1.4 miles (2.2 km) or less.

An unacceptable landscape was weakly defined by 12 percent of the 25 percent of respondents who identified the observatory on Mount Wilson from over 3 miles (4.8 km) away *(table 6).* At 4.7 miles (7.6 km), 83 percent of the respondents had not detected the observatory, but only 51 percent liked whatever they saw. Twenty nine percent did not like what they saw even though they were looking across the San Gabriel Wilderness Area. As previously indicated, dislike for natural scenes may be related to the meanings people assign to their perceptions. Thus, disliked objects may exist in any scene for a given viewer.

Transmission lines that spanned 1,130 feet (344 m) at Aliso Canyon were either not detected or were identified outright. At 1.3 miles (2.1 km), 77 percent did not detect the powerlines and only 15 percent identified them, but 48 percent identified them at 0.9 of a mile (1.4 km). Identification thresholds were found, for some people, with each change in distance, but the 33 percent difference between 1.3 and 0.9 miles indicated the primary identification threshold was at 0.9 of a mile *(table 6).* Even though the Aliso Canyon landscape was disliked by 26 percent of those who identified the powerlines at the threshold, it was classified as purposeful because 32 percent of them liked it at the nearest view distance where 67 percent identified the lines.

A satellite dish, on a ridge near La Posta Road, was detected by 68 percent of the respondents at about 1 mile (1.6 km), and 46 percent identified it to define an identification threshold *(table 6* and *fig. 9A)*. And, just as with Aliso Canyon, weaker thresholds existed at shorter and greater distances between the viewers and the subject. At 1 mile, like and dislike were about even, but at 0.6 of a mile (1.0 km) like of the landscape increased from 16 percent to 27 percent while dislike increased to 22 percent *(fig. 9B)*. Since feelings towards the satellite dish became more positive, the landscape was classified as purposeful.

An identification threshold was also defined by persons who knew they were seeing gravestones in the Westside Cemetery. At 0.2 of a mile (0.3 km), 43 percent of the viewers knew it was a cemetery, but only 2 percent had identified it at 0.3 of a mile (0.5 km) *(table 6).* The large change in identification as contrasted with the small change in viewing distance was surprising. Yet, things not remotely suggestive of gravestones were seen by 90 percent of the respondents at 0.3 of a mile. Since 26 percent of those identifying and 11 percent of those detecting the gravestones liked them, the landscape was regarded as purposeful.

Detected Landscapes

Subjects listed in the detected column were detected but not identified by some respondents. That is, they saw the subject portrayed by the slide (clearcut, microwave tower, mine, etc.), though they were unable to identify it. However, they provided an adequate description to let us know they had seen the subject without identifying it. Following are some examples of landscapes that were indistinct (detected and disliked) and some that were sensual (detected and liked).

A combination of brush-filled clearcuts, partial cuts, and blocks of old-growth forest at Deer Butte *(fig. 10),* was detected by 77 percent of the respondents. However, only 12 percent actually knew what they were looking at from half a mile (0.8 km), while 17 percent did not mention the treatments despite being only 0.3 of a mile (0.5 km) from the scene *(table 7).* Nevertheless, 30 percent detected the activity and liked what they saw, while 25 percent disliked it at half a mile.

The situation changed, however, at 0.3 of a mile where 38 percent disliked what they saw and 27 percent liked it. The reason for the change to disliking the scene may be related to how management was perceived. Almost all respondents (94 percent) thought the area was managed when viewed within half a mile, but 46 percent thought the management quality was poor and 15 percent rated it as devastating *(App. E,* Timber harvesting). They may not have understood what had happened, because they reported a variety of disliked events such as cuttings, edges, thinnings, bare areas, bums, sparse forest, plantations, manipulations, forest size, cleared areas, and snags and dead trees. Regardless of detection categories, the site was visually unacceptable to them because 19 percent of all respondents who viewed the site from half a mile or less disliked the cuttings, as contrasted with only 2 percent who liked them. Thus, the Deer Butte landscape was found to be illegible and disliked within half a mile, consequently it was classified as indistinct.

Interestingly, those who had not detected the management, simply recorded natural elements as most important to them, and a few that identified management liked it. In particular, snowbush *(Ceanothus velutinus* Dougl. ex Hook.) covered a clearcut, in the foreground of the scene. It was perceived as a "meadow" by 21 percent of all respondents, and 67 percent of those that detected the "meadows" liked them.

Disliking the partial cuts at Deer Butte may be related to the view being "in" the forest. The salvage logged forest at Crestview was seen from 0.6 of a mile (1.0 km) from the top of a hill---from "outside" the forest. Seventy percent of the respondents did not detect it, and 64 percent liked the view. Even the 23 percent who detected it, liked it. Furthermore, partial cuttings near Lake Como, with a seen-area of over 90 acres (36 ha), were undetected from 2.3 miles (3.7 km) by 88 percent and 69 percent liked the view. These percentages suggest that being close enough to see distinct edges, individual tree stems widely spaced with no understory plants, piled brush, or burned slash may contribute to disliking a view. Such things, seen at Deer Butte, were not evident in the scenes for Crestview or Lake Como.

The plantations, established 20 years ago in the clearcuts at Martin Creek, had a seen-area of 24 acres (9.7 ha.). They were detected by 76 percent of the people at 2.2 miles, whereas 46 percent detected them at 3.2 miles *(table 7).* Respondents reported seeing clearcuts or meadows, not new growth, young growth, regeneration, plantations, or other indicators of regeneration. Therefore, they saw the subject areas but not as a new forest. Only 2 percent recognized the plantations at 2.2 miles, which was not surprising because the young trees projected a relatively uniform field of green at that distance. Distance seemed to influence concern about what was detected. At 2.2 miles, 43 percent liked the regenerating clearcuts, but 34 percent disliked them at 1 mile. Consequently, the landscape was classified as obscure.

A

B

Figure 9-A satellite dish, along La Posta Road (A) from a simulated distance of about 1 mile (1.6 km), was recognized by 46 percent, and was liked or disliked about equally; and (B) from a simulated distance of 0.6 of a mile (1.0 km), was liked by 27 percent and disliked by 22 percent.

Figure 10-Ninety-four percent of the respondents thought the Deer Butte partial cuts were managed, but they may not have understood the management.

Table 7-Percent of respondents who liked, disliked, or were indifferent to illegible landscapes at specified distances

Subject	Miles	Detected[1]			Identified[1]			Detection[2]		
		L	D	I	L	D	I	L	D	I
						percent				
Deer Butte partial cuts	0.3	27	38	3	7	7	2	67	16	83
	0.5	30	25	6	3	5	2	66	12	77
	0.8	24	20	8	4	4	0	59	8	67
Martin Creek regeneration	1.0	22	34	3	0	0	0	65	0	65
	2.2	43	22	8	1	1	0	76	2	78
	3.2	18	21	5	0	1	0	46	1	47
Sleeping Child thinning	0.2	18	28	10	2	0	1	63	3	67
	0.4	15	34	7	1	2	0	56	3	59
	0.6	10	24	5	0	0	0	39	0	39
Sisi Butte clearcuts	2.2	37	19	2	4	2	0	60	6	66
	3.0	21	6	2	12	4	2	32	18	49
	5.2	10	6	1	5	1	1	17	8	25
	7.4	13	8	3	12	8	1	27	21	48
Siskiyou Lake brush clearing	0.8	41	8	8	3	0	0	58	4	63
	1.6	4	2	1	0	0	0	9	0	9
Bald Mountain Ski Area	1.8	16	10	1	34	11	7	29	53	82
	2.7	19	2	3	16	9	2	28	28	55
	3.6	16	4	4	27	12	5	24	45	68
	5.2	11	5	1	23	6	6	17	35	52
	7.3	6	0	0	21	1	3	6	25	31

[1]L = liked. D = disliked. I = indifferent.
[2]N = detected, not identified. R = identified. T = combined detection (N plus R).

Thinnings in lodgepole pine (*Pinus contorta* Dougl.), which had regenerated after the Sleeping Child Burn of 1961, created a landscape that viewers may have had difficulty interpreting *(fig. 11)*. A threshold was defined at about 0.4 of a mile, where 56 percent of the people had detected the thinnings and 34 percent disliked them *(table 7)*. Within that distance, 63 percent had detected and 28 percent disliked the thinnings. Based on these findings, the landscape was classified as indistinct. However, comments overheard from the audiences, as well as the low amount of identification (3 percent from 0.3 of a mile), suggest that few people understood what had happened to the landscape.

A series of parallel clearcuts, near Sisi Butte, were detected by 60 percent of the respondents from 2.2 miles, but only 32 percent detected them from 3 miles *(table 7)*. And despite a 13 percent difference in disliking between samples, a majority of those detecting management liked the cuttings (37 percent). Some people thought they were seeing ski runs, but most seemed unaware they were looking at clearcuts. Possibly the green cast of the cuttings or the visual fuzziness caused by light rain, may have created a favorable visual experience for the respondents. Regardless, the landscape was classified as sensual.

Near Siskiyou Lake, a detection threshold was found for a 2.4-acre (1.0 ha) brush clearing. It was defined by 58 percent of the respondents at 0.8 of a mile, and the landscape was considered sensual because 41 percent liked the clearings *(table 7)*. At 1.6 miles, 86 percent of the respondents had not detected the clearing, and 74 percent of them liked whatever they saw. Unfortunately, some were attracted by buildings in the foreground, so their attention may not have focused on the clearing.

The ski runs at Bald Mountain were detected by 52 percent of the respondents from over 5 miles, but only 31 percent detected them at 7.5 miles *(table 7)*. Furthermore, 34 percent liked the ski area, so it was classified as sensual. Bald Mountain also had an identification threshold from 1.8 miles where 53 percent of the people knew they were looking at ski runs and nearly all of them liked the scene *(table 7)*. Another identification threshold was located at 3.6 miles because 45 percent of the respondents knew they saw a ski area. However, the respondents proved to be professionals who worked for a natural resource agency---a highly sensitized population that might easily identify a ski area from considerable distance.

Figure 11-Thinning of lodgepole pine regeneration, in the Sleeping Child Burn, created a landscape that was not easily interpreted.

Despite being detected by 46 percent of the respondents, the regenerating clearcuts at Bad News Camp were not detected by 44 percent of the respondents, and 20 percent did not like whatever they saw. Further examination revealed that 32 percent of them did not like snags and 29 percent did not like the "sick" trees. The old-growth forest, in the foreground, had been severely damaged by insects, so many snags and dead or dying trees were evident. Apparently, the dead and dying trees drew the attention of many respondents, possibly distracting them from the obvious clearcut with its 13-year-old regeneration.

Not-Detected Landscapes

Landscapes were classified as not detected when 50 percent or more of the respondents failed to detect the target subjects, and a threshold was not identified. Twenty of the not detected landscapes were liked and classified as vague, while only one landscape was disliked or obscure. Essentially, the vast majority of people perceived landscapes as a mosaic of components that included lakes, mountains, meadows, hills, rivers, valleys, forests, or deserts. The land also may have been seen as various patterns, colors, or textures; as arid, dry, or barren; as enclosed or expansive; or as smoggy or hazy. Sometimes, roads, trails, farms, buildings, mines, timber cuttings, or other human influences may have been mentioned. In those cases, man-made objects were not critical elements.

Some of the landscapes classified as not detected provided information that may be useful for management. For example, I was surprised to learn that 41 percent of the respondents did not report seeing two very large clearcuts (about 150 acres each), with 20-year-old regeneration, on Little Guard Peak *(fig. 12)*. In general, they liked the scene, particularly the forest stands, and some reported seeing meadows, patches, terraces, bare areas, burns, and patterns, any of which could have been the clearcuts. Only 1 percent identified the regenerating cuts from 2 miles (3.2 km), and they liked them. Moreover, 52 percent detected the cuts, 35 percent liked them, and 12 percent disliked them. One might assume from these findings, that even large cuts may be seen favorably, provided they are well stocked with young trees giving the site a green look, as was the case with the cuttings on Little Guard Peak.

Figure 12 - The large regenerating clearcuts on Little Guard Peak were detected by only 52 percent of the respondents. Thirty-five percent liked the scene, while only 12 percent disliked it.

Dominant landscape features may divert attention from management action. At Badger Mountain, the seen area of brush clearing was 1.2 acres (0.5 ha.). However, it was too small to overcome Mount Lassen which commanded attention. Ninety-five percent of the respondents did not report the clearing, and at 2 miles 86 percent saw the mountain. Equally difficult to detect was the small fuelbreak at Pinnacles National Monument. Ninety-four percent saw mostly rocks or peaks, and 77 percent liked the scene. Apparently, very obvious consequences of management may not attract attention, and small consequences seem likely to be overlooked in the presence of visually powerful natural features.

I could easily detect Timberline Ski Area on Mount Hood from about 16 miles (25.7 km) *(fig. 13A)*, yet 88 percent of the respondents failed to detect it when portrayed from 2.7 miles (4.3 km) *(fig. 13B*). It was seen as a square in a snowfield on the side of the mountain. At the nearest distance, 36 percent reported the mountain, 15 percent reported snow, and 36 percent saw the forest in the foreground. Despite looking directly at the ski area, the attraction of the spectacular snow-covered peak, with storm clouds swirling around it, seemed to absorb attention without revealing the ski runs. Even, the edge, so distinct to a trained observer, was not sufficiently clear to attract more than 8 percent of the respondents. This is an example of a dominant landscape feature capturing human interest and preventing people from focusing sufficient attention to detect other landscape elements.

An active gold mine at Philadelphia Canyon had a seen area of 31 acres, yet it was not detected by 79 percent of the respondents even at the nearest view distance of 1.6 miles (2.6 km) *(fig. 3D)*. Most respondents, even those who detected or identified the mine, liked what they saw. And, most people, including those who had not mentioned the mine and disliked the scene, reported seeing natural landscape features. This seemed remarkable, because the top of the mountain had been removed and tailings spilled down the slopes. The color of the tailings may explain why people generally did not see the mining, just as color and texture were found to reduce the visibility of transmission corridors and towers (Driscoll and others 1976). Commonly, mine tailings contrast with surface soils and vegetation. For example, the tailings at Sampson Peak were light gray in contrast with the light brown soil and green shrubs, and at Goose Peak the light brown tailings contrasted with the green forest. However, the tailings at Philadelphia Canyon were multicolored and blended with the surface soils and vegetation. The effect was a pleasant scene accepted by the respondents.

Perception of Management and its Quality

Respondents were asked, for the last nine slides of each show, whether they thought the landscapes were managed or unmanaged and to give their opinion about the quality of any management perceived. Opinions on management were limited to the last nine slides to minimize bias that might be introduced had the questions been included from the beginning. Fifty-nine samples of the perception of management and quality were obtained for only 32 managed areas, and only 17 of the areas were represented by two or more viewing distances *(App. E)*.

Thirty one managed areas were perceived as having been subjected to some degree of management by 55 to 94 percent of the people, and 22 of the areas were seen as managed by 70 percent or more *(App. E)*. Fifty percent or more of them thought management was fair to intensive and quality was fair to well done for 18 of the areas, but that it was poor to devastating for 3 of them. One of the managed areas was perceived as managed by less than 50 percent of the respondents; 44 percent thought it was managed when they viewed it from 7.5 miles (12.1 km). Since the management area was seen across a wilderness area, more people may have thought it was managed had they seen it from a shorter distance. Fifty percent or more of the respondents thought management intensity was low to moderate for 20 of 32 managed areas and that quality was fair to well done on 21 of them. All managed sites were seen as unmanaged by some people, and all management was perceived as devastating by a few people.

Opinions on Specific Cases

The road at Frankish Peak was perceived as low management intensity by 54 percent at 2.7 miles, and 55 percent rated it fair to well done *(table 8)*. But at 1.4 miles, 45 percent rated the intensity as medium to intensive, and quality was rated poor by 36 percent and devastating by 14 percent. At 1.4 miles timber cuttings and other clearings were "seen" twice as frequently as at 2.7 miles, and the same was true for bare areas. This may account for management quality being perceived as not very good since many people tend not to like cuttings or clearings. However, the perception of timber cuttings is puzzling, because the lower slopes of the San Gabriel Mountains do not support timber-southern California simply is not a timber producing region. Again, people see what they are "programmed" to see; they tend to fill their expectations with their own reality. One other condition also may contribute to the poor opinion of management quality, especially when we consider that people are prone to make esthetic evaluations. The view seen from 2.7 miles *(fig. 8A)* was expansive and more attractive than that seen from 1.4 miles *(fig. 8B)*. Esthetic evaluations may account for the perception of less manage ment and good quality at the greater distance.

Forty-six percent of the respondents thought the landscape was managed as they viewed the scene that contained the Mount Wilson Observatory and radio towers from 7.5 miles *(table 8)*. Twenty-six percent thought the management quality was fair and 34 percent thought it well done. This result was not surprising, since the view was across the San Gabriel Wilderness, and the observatory had not been detected by 94 percent of the people at that distance.

Perceptions of management were high for the mines at French Creek (79 percent) at 1.3 miles and Lone Tree Creek (88 percent) at 6.2 miles *(table 8)*. Also, at the same distances, management quality was rated fair to well done by 69 percent for French Creek and 74 percent for Lone Tree Creek. At French Creek the landscape was seen as managed by 83 percent of the viewers at half a mile, and quality was perceived as

A

B

Figure 13-Timberline Ski Area on Mount Hood (A) was quickly detected by a trained observer from about 16 miles (25.7 km), but (B) was not even mentioned by 88 percent of the respondents who saw this simulation from a 2.7 mile (4.3 km) viewing distance.

Table 8-*Percent of opinions of whether landscapes containing evidence of various management actions were managed and the quality of the management*

Subject	Miles	Management[1]						Quality[2]				
		INT	MOD	VYL	TMG	UMG	NOR	WLD	FAR	POR	DVT	NOR
		Percent										
Frankish Peak	1.4	17	28	34	80	8	12	6	26	36	14	19
fire road	2.7	5	12	54	71	22	7	19	36	21	6	19
Mt. Wilson Observatory	7.5	2	5	39	46	44	11	34	26	6	2	33
French Creek mines	0.5	16	29	39	83	11	6	9	36	30	15	11
	1.3	4	37	39	79	11	10	23	46	14	1	16
Lone Tree Creek	1.6	5	4	36	55	32	14	9	30	18	16	28
mines	6.2	16	47	24	88	6	6	32	42	14	2	10
Sisi Butte clearcut	2.2	44	24	12	80	9	10	22	22	26	14	16
	3.0	33	38	13	84	8	7	35	32	15	6	12
	5.2	25	29	18	72	10	18	29	29	12	4	27
	7.4	14		23	84	7	9	23	42	14	2	18
Mifflin Creek	1.0	29	35	22	86	8	6	38	31	15	2	14
clearcuts	1.5	14	39	14	68	14	18	29	30	11	6	24
	2.0	24	33	23	80	8	11	38	29	12	3	18
	2.9	11	46	27	84	10	6	32	41	13	1	14
Martin Creek	1.0	59	25	5	89	4	7	13	21	38	22	7
Regenerating cuts	2.2	32	48	13	93	1	6	12	34	44	6	5
	3.2	23	42	15	80	15	5	16	37	33	5	9
Church Hills,	0.5	9	22	35	66	29	5	14	26	28	8	24
Wild Goose	1.0	18	22	18	58	28	14	24	27	11	3	34
juniper clearing	1.4	5	23	32	60	26	14	20	27	16	2	35
	3.3	2	24	31	57	26	18	29	37	6	0	28
Sardine Falls---	0.5	9	12	20	42	51	7	44	16	6	0	33
natural	1.0	15	30	23	68	25	8	45	22	6	0	28
Cuyamaca Rancho	1.2	21	33	23	76	16	8	26	16	30	12	17
meadow---natural	1.9	18	19	28	65	27	9	17	26	31	7	20
	2.7	7	15	28	50	37	14	30	23	10	5	32

[1]Management:
INT = intensively
MOD = moderately
VYL = very little
TMG = total management
UMG = unmanaged
NOR = no response

[2]Quality:
WLD = well done
FAR = fair
POR = poor
DVT = devastating
NOR = no response

poor to devastating by 45 percent of the people. However, the landscape containing the Lone Tree Creek mines, when seen from 1.6 miles, was perceived as managed by only 55 percent of the respondents, and 32 percent thought the landscape was unmanaged. Nevertheless, 34 percent thought the management quality was poor to devastating. A possible explanation is that, at 1.6 miles, bare areas and erosion were disliked and presumed to show a lack of management. Yet, at 6.2 miles large farms were clearly visible, may have diverted attention from the mines, and possibly contributed to a perception of management. While farms and mountains were liked by those who had not detected the mines, they were not a consideration at 1.6 miles:

	Numbers of Responses	
Perception	1.6 miles	6.2 miles
Disliked:		
Bare Areas	15	2
Erosion	12	2
Liked:		
Farms	0	21
Mountains	1	23

The clearcuts at Sisi Butte were seen as moderately to intensively managed by 68 percent of the respondents from 2.2 miles and by 71 percent from 3 miles *(table 8)*. Yet, 67 percent thought management was fair to well done from 3 miles, while only 44 percent held that opinion when the 10 acre seen-area was viewed from 2.2 miles *(fig. 14)*. Furthermore, 19 percent of the respondents disliked the clearcuts without being able to identify them-some thought they were looking at ski runs. The figure shows how the cuttings dominate the scene to enhance the perception of poor management.

Opinions on Regeneration

A landscape containing two large clearcuts (estimated at about 200 acres each), near Mifflin Creek in the Big Hole Valley, viewed from 2.9 miles (4.6 km) was perceived as moderately managed by 46 percent of the respondents, and fair to well done by 73 percent *(table 8)*. When the same landscape was seen from 1 mile, only 35 percent thought it moderately managed, while 29 percent reported intensive management.

Figure 14-Sisi Butte clearcuts, from a simulated 2.2 miles (3.5 km), were thought to be intensively managed by a majority of respondents, but the quality of management was considered good. A few perceived the cuttings as ski trails.

Nevertheless, opinions of the quality of management remained nearly the same: 73 percent reported fair to well done for 2.9 miles and 69 percent did so for 1 mile. Furthermore, at 1 mile 31 percent detected the clearcuts and most liked the view, while only 5 percent knew what they were seeing. Some people actually thought the cuttings were lakes.

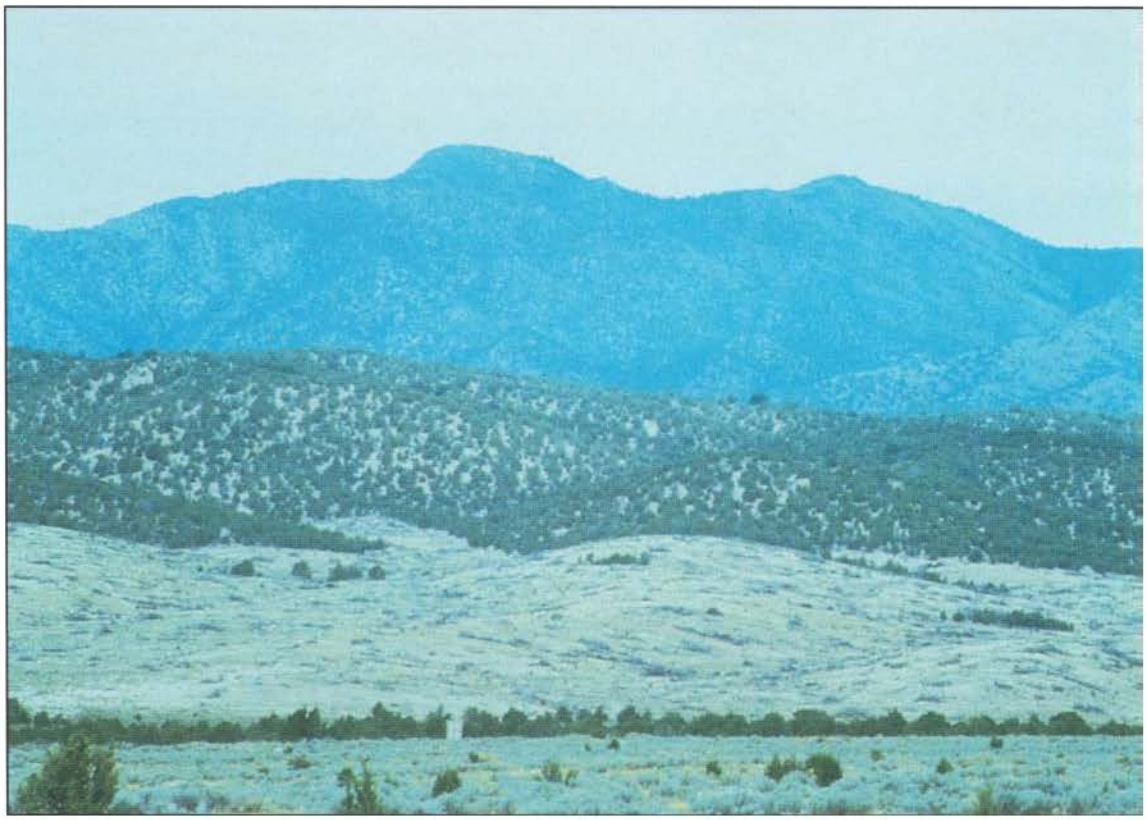
One goal of the study was to determine if or when regeneration of vegetation would successfully mask the impact of management actions so that identification and then detection would no longer be possible. A definitive answer was not revealed by the data. Identification thresholds were not identified for regeneration on any sites, but a detection threshold was identified for the regenerating clearcuts at Martin Creek *(table 5)*. Only 23 percent of the respondents thought the Martin Creek site was intensively managed when viewed from 3.2 miles, but 59 percent thought so from 1 mile *(table 8)*. And, quality of management was rated poor to devastating by 38 percent from 3.2 miles, but by 60 percent from 1 mile. Twenty-two percent thought it was devastating, but only 5 percent thought that from 3.2 miles. The difference of opinion for the near and far views may be explained by roads and cuttings being seen less frequently at the greater distance:

Feature seen	Respondents who disliked view at ...		
	1 mile	2.2 miles	3.2 miles
Road	23	3	2
Cuttings	55	54	30

But the difference also may be related to the more focused orientation of the near view. It emphasized the cuttings, but the 22-year-old regeneration did not project an image of a vigorous, well-stocked stand.

The 2-year-old juniper clearing on the Church Hills, as seen from Wild Goose Canyon, was cleared in irregular patterns to give the appearance of a natural, though abrupt, ecotone between trees and grass *(fig. 15A)*. Sixty-seven percent of the respondents failed to detect the activity at 1 mile or less. Surprisingly, slightly more than 25 percent actually thought the area was unmanaged regardless of viewing distance *(table 8)*. Most people regarded the management as fair to well done regardless of distance, but from half a mile 28 percent thought management was poor *(fig. 15B)*. At that distance, clearings, cuttings, sparse brush, burns, and bare areas were reported and may have contributed to perceptions of poor management.

A



B

Figure 15-The Church Hills landscape from Wild Goose Canyon, (A) from a simulated 1.4 miles (2.2 km) was seen as good management, and was thought to be unmanaged by 25 percent of the respondents; and (B) from a simulated distance of half a mile (0.8 km), was regarded as poor management by 28 percent of the respondents.

Perceived Management in Natural Areas

I assumed that if people believed an area was natural, they would report it as unmanaged, and either they would not report management quality or possibly report "well done." Management was perceived and reported by 50 to 76 percent of the respondents for five of the six natural areas when seen at the nearest distance sampled *(App. E)*. Most of the areas were not perceived as intensively managed. The quality of the "management" was considered fair to well done by more than 50 percent of the respondents for only half of the areas at the nearest distance. "Fair to well done" was reported in a range from 42 to 68 percent, and "well done" from only 17 to 46 percent.

Sardine Falls was the only natural area reported as natural by more than 50 percent of the respondents *(table 8)*. Yet, 68 percent perceived management at 1 mile, but 51 percent thought it was unmanaged at half a mile. The quality of management was not seen as better or worse regardless of distance. Comparing *figures 16A* and *16B,* the main difference is the broader view in *figure 16A* which emphasizes a meadow with sagebrush, some riparian vegetation, and scattered pines. I assumed the meadow was perceived as management, possibly a ranch or maybe the line of the stream was seen as a road. A few people even mentioned roads, trails, manipulations, cuttings, or bare areas-elements that enhance the image of management. But, further analysis of responses showed that a meadow was reported at 1 mile but not at half a mile, mountains and forest reports decreased at half a mile, snow remained about the same, and waterfall sightings increased dramatically:

Feature seen	Frequency of reports at ...	
	0.5 mile	1 mile
Snow	49	46
Waterfall	26	2
Mountains	17	24
Forest	11	24
Meadow	0	21

Since the meadow was not seen at half a mile, where the perception of management was much less, it may have been the landscape element predominantly responsible for the image of management at 1 mile.

A natural meadow, at Cuyamaca Rancho State Park, was the only natural site to be rated as devastating management quality by over 10 percent of the people. At 2.7 miles, 50 percent of the respondents thought it was managed, 53 percent saw the management as fair to well done, and only 5 percent thought it was devastating. However, from 1.2 miles, 76 percent said it was managed, 30 percent said it was poor, and 12 percent reported it was devastating. The increased perception of poor management is explained by the more frequent reports of disliked clearings, cuttings, bare areas, sparse vegetation, and no regeneration at 1.2 miles: 31 reports versus only 2 reports at 2.7 miles.

Implications for Research and Management

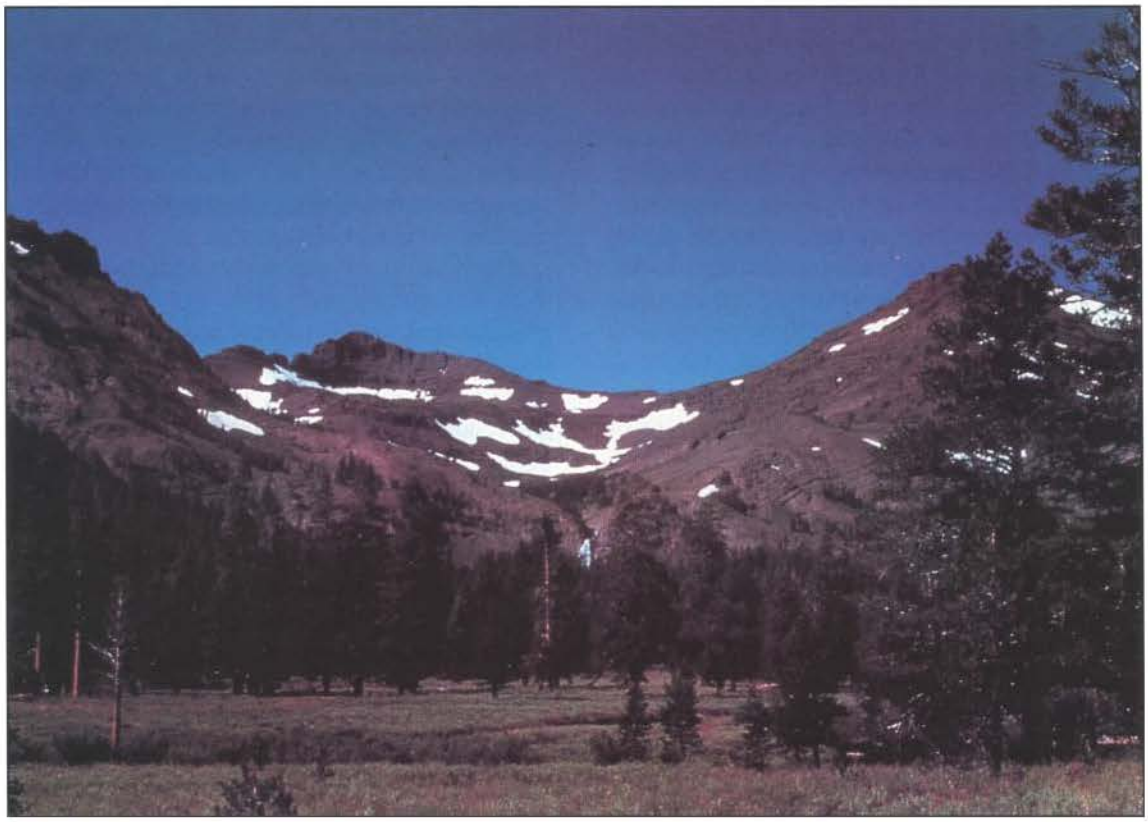
The results provide general information for managers, and offer opportunities for more intensive research. The research results did not, however, provide a means to classify visual sensitivity or verify the visual quality objectives of the Visual Management System and Visual Resource Management, based on the concern people have for the scenic quality of landscapes.

Managed landscapes can be classified by the visual threshold meaning model according to identification, detection, or nondetection by a few visually sensitive people and according to whether they liked, disliked, or were indifferent to the perceived components. The study also found that, not only did a majority of the respondents perceive management as well done, the few who had detected or identified management actions also liked what they saw. Thus, 23 of 30 detected actions were liked and 8 of 12 identified actions were liked. This result suggests that the model might be used to develop an operational classification of public concern for scenic quality. However, additional research would be needed to identify a range of sizes in relation to observational distances for any given management action.

The threshold meaning model proved effective for identifying threshold distances at which a few viewers, possibly sensitized by education and interest, could detect or identify specific management actions. Additional research may determine if thresholds can be identified for the majority of less sophisticated viewers. Future studies should not emphasize numerous management actions, but they should focus on a specific action, as was done in the Pacific Northwest to determine how the visibility of powerlines was influenced by tower type and right-of-way clearing (Driscoll and others 1976). Future studies also should be limited to a specific regional landscape, not several landscape types. For example, clearcutting might be studied in the Douglas-fir forests of Washington and Oregon or the lodgepole pine forests of western Montana. Regardless of the location, people should be shown illustrations of a progressive range of cutting sizes and distances as well as stages from freshly cut to fully regenerated cuts. A similar approach could be taken for mining, vegetation type conversions, ski areas, roads, and other man-made visual impacts.

Despite some limitations, slides or photographs remain an acceptable surrogate for the monetarily and logistically restrictive procedure of transporting respondents into landscapes.

Another concept, visual absorption capability (VAC), which is a measure of the capability of landscapes to meet visual quality objectives through the ability of various landscape components to absorb the visual impact of management actions (Anderson and others 1976), could be supported by the development of comprehensive visual thresholds. For example, VAC suggests that well defined edges have low absorption capability, because they can be focal points. Certainly, the large per-



A

B

Figure 16-The natural scene at Sardine Falls was (A) thought to be managed when seen from 1 mile (1.6 km); but (B) from a simulated half a mile (0.8 km) was correctly perceived as unmanaged by 51 percent of the viewers.

centage of respondents who reported the cuttings at Martin Creek and Sisi Butte as well as the prominent ski runs on Bald Mountain were attracted by the prominent cutting edges. And, it should be equally clear that the low color contrast between the mining overcast and adjacent land was probably responseble for the nearly 80 percent nondetection at Philadelphia Canyon. However, until thresholds can be precisely defined for specific management actions and regional landscapes, the model cannot be used and VAC will suffer that same difficulty as the management objectives-it will have no basis in public concern for landscape quality.

Though the photographic samples were obtained from a cross-section of western landscapes and management actions, the scale of critical elements was of limited range with regard to both size of the elements and the distances from them to the observer. Consequently, detection or identification thresholds could not be identified for a progression of sizes or distances for each critical element sampled. However, the data have shown that some viewers were sensitive to management actions, for the sizes and at the distances studied. This result suggests that specific thresholds exist, and a few people are sensitive to management at the thresholds.

Most of the people who did not detect or identify the management reported general landscape components such as trees, valleys, hills, and mountains. However, managers are well advised not to assume respondents did not see the consequences of management. The management may not have been as important to them as other objects. Given a change of scale, either subject size or distance from the observer to the subject, perceptions of the "apparently unobservant" viewers may change. If change leads to detection or identification of a management action, it may also lead to a positive or negative reaction on the part of observers.

The majority of respondents identified management. Furthermore, most respondents thought the management was fairly good, and they perceived natural areas, in the study, as managed. However, people, in general, may use different criteria to evaluate landscapes and management than do trained professionals or segments of society sensitized by their particular environmental interests (Sewell 1971). Respondents who identified and thought management was good may be like people who use developed recreation sites and commonly talk about being "in the wilderness." Management may be perceived in very general terms. If developed sites are seen as "in the wilderness," then possibly "management" may be perceived on landscapes whether natural or managed. One might consider that people from a predominantly urban society are usually confronted with management wherever they go. Thus, management on wildland areas may be expected and acceptable to city dwellers.

Appendix A

Study Locations and Subjects

Locations	Subjects
Aliso Canyon, Angeles National Forest. California	Powerlines (area burned in 1979).
Andrews Experimental Forest, Willamette National Forest, Blue River, Oregon	Regeneration in 17-year-old clearcut planted in 1966; hardwoods to the right.
Apache Canyon, Ventura County, Los Padres National Forest, California	Natural canyon with erosion, and natural dry river bed
Avenue of the Giants, Eel River, near Miranda, California	Regenerating redwood in 25-year-old clearcut on private land.
Bad News Camp, Bitterroot National Forest, Montana	Regenerating clearcut (13 years) with insects infesting the adjacent mature forest.
Badger Mountain, Lassen National Forest, California	Brush clearing (10 yrs) with Mount Lassen dominating view.
Bald Mountain, Sawtooth National Forest, Sun Valley, Idaho,	Summer view of ski runs which, are easily seen.
Beaver Creek, Tillamook State Forest, Tillamook, Oregon	Current cutting and 10- and 15-year-old regeneration on other cuts.
Big Prather Meadow, Stanislaus National Forest, California	Cutting for subdivision; cut shortly before 1971 (12 yrs).
Black Fox Mountain, Shasta-Trinity National Forest, California	Brush clearing on ridge with sprayed brush in foreground.
Black Mountain, Badger Pass, Beaverhead National Forest, Montana	One-year-old clearcuts and sagebrush in black appearing forest
Black Mountain, Beaverhead National Forest, Bannack, Montana	Same as above.
Capitol Hill, Carbon Creek, Idaho Panhandle National Forests, Idaho	Natural forest adjacent to an area burned in 1908.
Church Hills, Holden off-ramp, Holden, Utah	Juniper clearings (2 yrs) for wildlife habitat improvement.
Church Hills. 1-15, Holden, Utah	Juniper clearings (same).
Church Hills, Wild Goose Canyon, Holden, Utah	Juniper clearings (same).
Craters of the Moon National Monument, Idaho	Natural lava flow; resembles mine tailings seen in Nevada.
Crestview, U.S. 395, Inyo National Forest, California	Salvage logging (22 yrs) presents a sparse appearing forest when viewed from above.
Cuyamaca Rancho State Park, San Diego County, California	Natural meadow surrounded by pine/oak forest.
Death Valley Junction, State Route 190, California	Parallel mining roads cut through desert brush.
Deer Butte. McKenzie Ranger District, Willamette National Forest, Oregon	Partial cuts and clearcuts, regrown to snowbrush (32 years)
Dry creek, Big Hole Ranch, Beaverhead National Forest, Montana	Clearcut (395 acres) done 5 years ago (1977-78).
Everett Hill, Mt. Shasta, Shasta Trinity National Forest, California	Brush clearing surrounded by mixed-conifer forest.
Frankish Peak, Glendora Ridge Road, Angeles National Forest, California	Fire road and old burn.
French Creek. Beaverhead National Forest, Montana	Several abandoned mines with dirt road in foreground.
Funeral Range, State Route 190, Death Valley Junction, California	Natural desert mountains (resembles mining).
Goose Peak and Sunset Peak, Idaho Panhandle National Forest, Idaho	Mines on slope; microwave and lookout on peaks.
Haugan Mountain, Lolo National Forest, Montana	Seventy-three-year-old regeneration following 1910 fire.
Horse Mountain, Mendocino National Forest. California	Brush clearing in Round Mt. burn of 1966 (16 yrs later).
Kratka Ridge, San Gabriel Wilderness, Angeles National Forest, California	Building (outside wilderness) appears as long gray rock.
La Posta Road, San Diego County, California	Satellite tracking dish at top of chaparral covered hill.
Lake Como and Tin Cup Creek, Bitterroot National Forest, Montana	Single tree selection cuttings (600 acres in 60- to 80-acre blocks) after 13 years.
Lick Creek. Bitterroot National Forest, Montana	Clearcut 1971, burned 1973, planted 1981-82 (60 acres) and viewed after 13 years.
Little Crater Lake Campground, Mount Hood National Forest, Oregon	Regenerating clearcut (cut in 1969, planted in 1970, and now 13-years-old).
Little Fall Creek, North of Willamette National Forest, Oregon	Twenty-rear-old regeneration on a large area having at least two age classes.
Little Guard Peak, Idaho Panhandle National Forests, Idaho	Large regenerating clearcuts; cut 20 years ago and planted 18 years ago.
Lone Tree Creek, White Mountains, Inyo National Forest, California	Abandoned gold mine: probably active in late 1800's for gold.
Lost Creek, Idaho Panhandle National Forests, Idaho	Regeneration after 1910 fire (73 yrs).
Mammoth Mountain, Inyo National Forest, California	Ski area; runs are not easily seen since timber is scattered.
Martin Creek, Bitterroot National Forest, Montana	Regenerating clearcuts (cut 22 years ago and planted 20 years ago).
McIntosh Well, Shasta-Trinity National Forest, Bartle, California	Pine plantation (20 years) with Mount Shasta in the back ground.
Mendenhall Peak, Angeles National Forest, California	Latticed utility tower seen on a ridge through smog.
Mifflin Creek and Jumbo: Mountain, Beaverhead National Forest. Montana	Large clearcuts, done in 1977-78 (5-yrs-old).
Moon Pass, Idaho Panhandle National Forests, Idaho	Regeneration on area burned in 1910 and 1979 and planted in 1980 (73 years after 1910).
Mount Saint Helens, Clearwater Creek Gifford Pinchot National Forest, Washington	Salvage logging at Mount Saint Helens 3 years after the eruption.
Mount Wilson, Angeles National Forest, California	Observatory and communication towers seen across wilderness.

Appendix A, continued

Locations	Subjects
Oak Grove Butte, Clackamas Ranger District, Mount Hood National Forest, Oregon	Regenerating clearcut (15- to 20-yrs-old and 25 ft tall).
Philadelphia Canyon, south of Battle Mountain, Nevada	Active gold mine blends with surrounding landscape.
Pickel Meadow, Marine Mountain Warfare Training Center, Sonora Pass, California	Buildings at training center.
Pine Creek, Inyo National Forest, California	Mine tailing ponds in canyon with spectacular cliffs.
Pinnacles, National Monument, San Benito County. California	fuelbreak below rock as seen. from park entry road.
Poleta Creek, Inyo National Forest, Bishop, California	Microwave tower and off-road vehicle trails.
Reynolds Creek, Bitterroot National Forest, Montana	Natural forest and mountains.
Sampson Peak, San Benito County, California	Cinnabar and coal mines abandoned for over 40 years.
Sardine Falls. Sonora Pass. Toiyabe National Forest, California	Natural waterfalls, forest, meadow, and mountains.
Schultz Creek, Beaverhead National Forest, Montana	Six-year-old burn with trees still standing.
Silvertip, Clackamas Ranger District. Mount Hood National Forest, Oregon	Clearcuts (1 yr) and regenerating clearcuts.
Sisi Butte, Clackamas Ranger District, Mount Hood National Forest, Oregon	Clearcuts (about 15 yrs) in rows that resemble ski runs.
Siskiyou Lake. Mount Shasta City,, Shasta-Trinity National Forest, California	Brush cleared and piled in an are surrounded by forest.
Sleeping Child Burn, Blue Mountain, Bitterroot National Forest, Montana	Pine regeneration following a 1961 burn was thinned 7 years ago
Southern Belle Mine, White Mountains, Inyo National Forest, California	Gold mine abandoned 80 years ago (1910) after operating for 75 years.
Steel Creek (upslope), Beaverhead National Forest, Wisdom, Montana	Type conversion completed 7 years ago (fence divides the grass from the sagebrush).
Steel Creek (open), Beaverhead National Forest, Wisdom, Montana	Eight-year-old type conversion (burn) seen as an open field.
Stovepipe Wells, Death Valley National Monument, California.	Natural dunes and mountains.
Suntop, near Mt. Rainier, Snoqualmie National Forest, Washington	Regenerating Douglas-fir clearcuts after 30 years.
Timberline, Mount Hood National Forest, Oregon	Ski area seen as a square in a snowfield.
Ward Mountain, Humboldt National Forest, Ely, Nevada	Terraces on grass slope to control erosion 25 years ago.
Westside Cemetery, Plumas National Forest, Calpine-Beckwourth, California	Gravestone in a pioneer cemetery.
White Mountains, Inyo National Forest, north of Laws, California	Switchbacking trails to mines above Southern Belle claims.
Whitman Creek and Sumpter Creek, Rogue River National Forest, Oregon	Clearcuts and shelterwood cuts (17 yrs) in Douglas-fir.
Yellowjacket Ridge and Applegate Reservoir, Rogue River National Forest, Oregon	Cuttings (20 yrs) and roads on ridge above a reservoir.

Appendix B

Questionnaire

(Answer blanks for slides 8-27 have been moved from this example questionnaire because they are repetitious.)

Landscape Assessment Questionnaire O.M.B. Number 0596-0090____
Slide Series Number _____ Expires 12/31/86 _____

WHAT DO YOU SEE?

Please do not write your name on the questionnaire.
You will not be identified with any of your responses. Data from each person will be combined to provide group results. You will remain anonymous.

Please ignore the numbers in parentheses; they will be used to code answers.

Part I: Personal Background

1. Please check the category that most nearly identifies your occupation.

Retired or unemployed ..... [ ] (1)
Professional and technical ..... [ ] (2)
Managers, officials, and proprietors ..... [ ] (3)
Clerical workers ..... [ ] (4)
Sales workers ..... [ ] (5)
Craftsmen and foremen ..... [ ] (6)
Operatives (drivers, deliverymen, etc.) ..... [ ] (7)
Laborers ..... [ ] (8)
Service workers (waiters, cooks, bartenders, etc.) ... [ ] (9)

2. If your employment is directly concerned with natural resources (forests, water, minerals, etc.), please check this box. [ ]

3. What is your age?

15-24 years ..... [ ] (1)
25-34 years ..... [ ] (2)
35-44 years ..... [ ] (3)
45-54 years ..... [ ] (4)
55-64 years ..... [ ] (5)
65 years and over ..... [ ] (6)

4. What is your sex?

Female ..... [ ] (1)
Male ..... [ ] (2)

5. Where do you live now?

Metropolitan area:
In central city ..... [ ] (1) State
In suburbs ..... [ ] (2)
Outside metropolitan area.... [ ] (3) How long? years

6. Where did you live most of your life?

Metropolitan area:
In central city ..... [ ] (1) State
In suburbs ..... [ ] (2)
Outside metropolitan area.... [ ] (3) How long? years

continued

7. What was your total family income before taxes during the past year? (Your name is not on the questionnaire; your answer will be anonymous.)

Less than $5,000 ..... [ ] (1)
$5,000 to $9,999 .....[ ] (2)
$10,000 to $14,999 ..... [ ] (3)
$15,000 to $19,999 ..... [ ] (4)
$20,000 to $24,999 ..... [ ] (5)
$25,000 to $34,999 ..... [ ] (6)
$35,000 to $49,999 ..... [ ] (7)
$50,000 and over ..... [ ] (8)

8. What is the highest level of school you have completed?

Elementary school:
Less than 8 years .. [ ] (1)
8 years ..... [ ] (2)
High school:
1-3 years ..... [ ] (3)
4 years ..... [ ] (4)
College:
1-3 years ..... [ ] (5)
4 years ..... [ ] (6)
Over 4 years ..... [ ] (7)

9. Please list your membership in any professional or nonprofessional clubs, societies, or associations that are concerned with the conservation, management, or preservation of our natural resources (forests, ranges, water, minerals, air, wilderness, or scenic).

a) _____
b) _____
c) _____
d) _____

10. Please look at the following list of outdoor recreational activities and check those in which you actively participate on natural resource areas (forests, rangelands, or deserts):

Fishing..... [ ] (1)
Hiking..... [ ] (2)
Camping..... [ ] (3)
Picnicing..... [ ] (4)
Sight seeing... [ ] (5)
Nature study. .. [ ] (6)
ORV use ..... [ ] (7)
Hunting ..... [ ] (8)
Skiing ..... [ ] (9)
Climbing ..... [ ] (10)
Boating ..... [ ] (11)
Swimming ..... [ ] (12)
Horseback riding .... [ ] (13)
Photography, art.... [ ] (14)

continued

Part II: Landscape Assessment Responses
Answer for each slide:
Briefly describe, in order of importance to you, the two objects that attracted your attention in the picture, and indicate for each object whether you like it, dislike it, or are indifferent (Indf.) about it.

Slide No. 1

	Describe What Attracted you.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 2

	Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 3

	Describe What Attracted you.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 4

	Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 5

	Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 6

	Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

Slide No. 7

	Describe What Attracted you.	Like (1)	Dislike (2)	Indf. (3)
1)	_____	[ ]	[ ]	[ ]
2)	_____	[ ]	[ ]	[ ]

continued

Part III: Landscape Perception Responses

Answer for each slide:

a) Briefly describe, in order of importance to you, the two objects that attracted your attention in the picture, and indicate for each object whether you like it, dislike it, or are indifferent (Indf.) about it.

b) In your opinion, has the landscape been managed (e.g., subject to timber harvesting, grazing, mining, or other uses), and what is your opinion of the quality of management:

Slide No. 28

a) Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1) _____	[ ]	[ ]	[ ]
2) _____	[ ]	[ ]	[ ]

b) Management Intensity Quality Managed:

Intensively. [ ] (1)
Moderately .. [ ] (2)
Very little . [ ] (3)
Unmanaged ..... [ ] (4)

Management

Well-done ..... [ ] (1)
Fair ..... [ ] (2)
Poor ..... [ ] (3)
Devastating ... [ ] (4)

Slide No. 29

a) Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1) _____	[ ]	[ ]	[ ]
2) _____	[ ]	[ ]	[ ]

b) Management Intensity Quality Managed:

Intensively . [ ] (1)
Moderately .. [ ] (2)
Very little . [ ] (3)
Unmanaged ..... [ ] (4)

Management

Well-done ..... [ ] (1)
Fair ..... [ ] (2)
Poor ..... [ ] (3)
Devastating ... [ ] (4)

Slide No. 30

a) Describe What Attracted You.	Like (1)	Dislike (2)	Indf. (3)
1) _____	[ ]	[ ]	[ ]
2) _____	[ ]	[ ]	[ ]

b) Management Intensity Quality Managed:

Intensively . [ ] (1)
Moderately .. [ ] (2)
Very little . [ ] (3)
Unmanaged ..... [ ] (4)

Management

Well-done .... [ ] (1)
Fair ..... [ ] (2)
Poor ..... [ ] (3)
Devastating.. [ ] (4)

That completes the assessments. Thank you very much for your participation.

Appendix C

Social Characteristics of Respondents

Personal Characteristics

Occupation	percent	(n)
Retired/unemployed	29.0	(227)
Professional/technical	40.9	(320)
Manager/official/owner	9.3	(73)
Clerical workers	5.7	(45)
Sales workers	2.7	(21)
Craftsmen/foremen	7.5	(59)
Operatives/delivery	1.0	(8)
Laborers	2.6	(20)
Service workers	1.3	(10)
Totals	100.0	(783)

Occupation Related to Natural Resources	percent	(n)
Yes	24.7	(194)
No	75.3	(592)
Totals	100.0	(786)

Age of Respondents	percent	(n)
Under 15	1.0	(8)
15 to 24	8.7	(68)
25 to 34	18.5	(145)
35 to 44	22.8	(179)
45 to 54	20.2	(158)
55 to 64	14.7	(115)
Over 65	14.2	(111)
Totals	100.1	(784)

Sex of Respondents	percent	(n)
Female	39.5	(305)
Male	60.5	(468)
Totals	100.0	(773)

Gross Family Income	percent	(n)
Less than 5,000	2.7	(20)
5,000 - 9,999	4.4	(33)
10,000 - 14,999	6.4	(48)
15,000 - 19,999	5.5	(41)
20,000 - 24,999	8.3	(62)
25,000 - 34,999	19.8	(148)
35,000 - 49,999	23.9	(178)
50,000 and over	29.0	(216)
Totals	100.0	(746)

Education	percent	(n)
Elementary school		
Under 8 years	1.2	(9)
8 years	0.6	(5)
High school		
1 to 3 years	5.0	(39)
4 years	3.3	(104)
College		
1 to 3 years	30.0	(234)
4 years	11.7	(91)
Over 4 years	38.3	(299)
Totals	100.1	(781)

Frequency of Wildland Recreation Activity	percent	(n)
None	1.9	(15)
Low (1-2 activities)	9.4	(73)
Moderate (3-5)	36.8	(286)
High (6-10)	45.0	(350)
Very high (over 10)	6.9	(54)
Totals	100.0	(778)

Location of Current Residence	percent	(n)
Central city	17.3	(135)
Suburbs	59.7	(466)
Outside city	22.4	(175)
City and suburbs	0.0	(0)
Suburbs and outside	0.4	(3)
All locations	0.3	(2)
Total	100.1	(781)

Location Lived in Most of Life	percent	(n)
Central city	18.5	(144)
Suburbs	58.2	(452)
Outside city	21.9	(170)
City and suburbs	0.4	(3)
Suburbs and outside	0.8	(6)
All locations	0.3	(2)
Total	100.1	(777)

Region of Current Residence	percent	(n
Several regions	0.3	(2)
Pacific coast	96.4	(744)
Pacific interior	1.7	(13)
Central	0.4	(3)
Northeast	0.5	(4)
Southeast	0.1	(1)
South	0.1	(1)
Canada	0.3	(2)
Other foreign	0.3	(2)
Total	100.1	(772)

Region Lived in Most of Life	percent	(n)
Several regions	0.7	(5)
Pacific coast	77.2	(584)
Pacific interior	3.3	(25)
Central	8.2	(62)
Northeast	7.3	(55)
Southeast	0.5	(4)
South	0.5	(4)
Canada	0.7	(5)
Other foreign	1.6	(12)
Total	100.0	(756)

Time Lived at Current Residence	percent	(n)
Less than 2 years	6.8	(52)
2 to 5 years	10.4	(80)
6 to 10 years	13.0	(100)
11 to 20 years	20.9	(161)
21 to 30 years	17.7	(136)
More than 30 years	31.3	(241)
Total	100.1	(770)

Time Where Lived Most of Life	percent	(n)
Less than 2 years	0.0	(0)
2 to 5 years	0.3	(2)
6 to 10 years	3.0	(23)
11 to 20 years	19.0	(145)
21 to 30 years	29.5	(225)
More than 30 years	48.2	(367)
Total	100.0	(762)

Types of Groups Sampled

	percent	(n)
Government agencies (natural resource)	11.1	(87)
Professional societies (natural resource)	8.3	(65)
Conservation organizations (cause oriented, e.g., Sierra Club, Wilderness Society, Audubon Society, etc.)	12.3	(97)
Conservation organizations (activity oriented, e.g., ORV clubs, hunting and fishing clubs, etc.)	23.0	(181)
General public (shows at visitor center, others)	15.1	(119)
Industrial organizations (natural resource)	3.2	(25)
Miscellaneous organizations (PTA, garden clubs, bicycle clubs, service clubs, etc.)	22.4	(176)
College students (natural resource)	3.2	(25)
College students (other)	1.4	(11)
Total	100.0	(786)

continued

Organizational Affiliation by Society Groups

Each of 788 respondents could specify membership in 1 to 4 organizations

	Respondents	
Professional Groups:	percent	(n)
American Association for the Advancement of Science	0.5	(4)
American Fisheries Society	2.5	(20)
American Forestry Association	0.6	(5)
American Museum of Natural History	0.1	(1)
American Society of Landscape Architects	1.4	(11)
American Sociology Association	0.1	(1)
Association of Interpretive Naturalists	0.3	(2)
Association of National Park Rangers	0.3	(2)
Canadian Entomological Society	0.4	(3)
Canadian Institute of Forestry	0.3	(2)
Ecological Society of America	0.5	(4)
Engineers, all	0.3	(2)
Entomological Society of America	0.5	(4)
International Society of Arboriculture	0.3	(2)
International Union Forestry Research Organizations	0.1	(1)
Licensed foresters, landscape architects, etc.	0.1	(1)
Miscellaneous professional societies	1.5	(12)
Park Ranger Association of California	0.1	(1)
Society of American Foresters	2.4	(19)
Soc. Range Management	0.1	(1)
Soil Conservation Society of America	0.1	(1)
Surveying societies (national, state, local)	0.1	(1)
The Wildlife Society	1.3	(10)
Western Interpreters Association	0.3	(2)
Total Responses for Professional Groups	9.9	(112)
Group of Ten:		
Environmental Defense Fund	0.3	(2)
Environmental Policy Institute	0.0	(0)
Friends of the Earth	0.6	(5)
National Audubon Society	6.3	(50)
National Parks & Conservation Association	0.3	(2)
National Wildlife Federation	2.9	(23)
Natural Resources Defense Council	0.6	(5)
Sierra Club	15.6	(123)
Sierra Club Legal Defense Fund	0.0	(0)
The Wilderness Society	3.1	(24)
Total Responses for the Group of Ten	20.6 (234)	
Other Conservation Groups:		
Earth First	0.3	(2)
Greenpeace	0.8	(6)
National Geographic Society	0.6	(5)
National Recreation and Park Association	0.4	(3)
Smithsonian Institution	0.1	(1)
The Cousteau Society	0.9	(7)
The Nature Conservancy	4.7	(37)
California Native Plant Society	0.6	(5)
California Park and Recreation Society	1.3	(10)
California Wildlife Federation	2.4	(19)
Environmentally oriented groups	12.6	(99)
Local conservation groups	9.6	(76)
Planning & Conservation League	0.1	(1)
Save-the-Redwoods League	0.1	(1)
California Conservation Corps	1.4	(11)
Total Responses for Other Conservation Groups	25.0	283)

Organizational Affiliation by Society Groups (continued)

	Respondents	
Sportsmens Groups:	percent	(n)
California Striped Bass Association	0.1	(1)
California Trout	1.0	(8)
California Waterfowl Association	0.6	(5)
Ducks Unlimited	1.8	(14)
National Rifle Association	1.4	(11)
Off Road Vehicle Clubs	6.2	(49)
Sportsmens Clubs (hunting, fishing, etc.)	10.4	(82)
Trout Unlimited	0.3	(2)
Total Responses for Sportsmens Groups	15.2	(172)
Industrial Groups:	percent	(n)
Assoc. concerning signs, billboards, etc.	0.1	(1)
Mining, in general	0.3	(2)
National Forest Products Association	0.1	(1)
Utilities (water, power, etc.)	0.1	(1)
Various logging associations	2.2	(17)
Western Timber Association	0.1	(1)
Total Responses for Industrial Groups	2.0	(23)
Responses for Miscellaneous Groups	0.2	(2)
Total Responses for the Affiliated	72.9	(826)
Total Responses for the Unaffiliated	27.2	(308)
Total Responses	100.1	(1134)
Unaffiliated Respondents	39.1	(308)
Respondents that Belonged to 1 to 4 Groups	60.9	(480)
Total Respondents	100.0	(788)

$$\text{Percent Responses} = \frac{\text{Number of Responses}}{1134} \times 100$$

$$\text{Percent Responses} = \frac{\text{Number of Respondents}}{788} \times 100$$

Appendix D

Visual Threshold Meaning Model

Critical components are arranged in decreasing percentages up from the center if they were disliked, and down from the Center if liked. * signifies components for which a seen determination was not calculated because the component filled most of the view.

NOT DETECTED: (other than critical element seen)		DETECTED: (critical element seen, not identified)		IDENTIFIED: (critical element identified)
OBSCURE	(dislike)	INDISTINCT	(dislike)	UNACCEPTABLE
		Clearcut 2.9 acres (1.2 ha) 23-12 percent (combined) 0.9-1.3 mi (1.4-2.1 km) Beaver Creek		
		Sanitation cuts * 23-02 percent 2.4-6.7 mi (3.9-10.8 km) Mount Saint Helens		
		Regenerating clearcuts 4.5 acres (1.8 ha) 46-26 percent 0.8-1.3 mi (1.3-2.1 km) Bad News Camp		
		Brush clearing 6.4 acres (2.6 ha) 47-21 percent 1.5-2.1 mi (2.4-3.4 km) Horse Mountain		Abandoned mines 2.0 acres (0.8 ha) 24-0.3 percent 0.5-0.8 mi (0.8-1.3 km) French Creek
		Thinning 13 ft (4.0 m) 56-39 percent 0.4-0.6 mi (0.6-0.9 km) Sleeping Child		Observatory 0.8 acre (0.3 ha) 25-10 percent 3.2-4.7 mi (5.1-7.6 km) Mount Wilson
		Regenerating clearcuts 23.6 acres (9.6 ha) 76-46 percent 2.2-3.2 mi (3.5-5.1 km) Martin Creek		Fire road 1370 ft (418 mi) 39-29 percent 1.9-2.7 mi (3.0 4.3 km) Frankish Peak
Regeneration * 60 percent nondetect 1.7 mi (2.7 km) Moon Pass		Partial cuts * 77-67 percent (combined) 0.5-0.8 mi (0.8-1.3 km) Deer Butte		Utility tower 97 ft (30 m) 59-18 percent 0.6-1.1 mi (0.9-1.8 km Mendenhall Peak
OBSCURE	(dislike)	INDISTINCT	(dislike)	UNACCEPTABLE

NOT DETECTED: (other than critical element seen)	DETECTED: (critical element seen, not identified)	IDENTIFIED: (critical element identified)
VAGUE (like)	SENSUAL (like)	PURPOSEFUL
Brush clearing 1.2 acres (o.5 ha) 95 percent nondetect 2.0 mi (3.2 KM) Badger Mtn/Lassen	Clearcuts 10.1 acres (4.1 ha) 60-32 percent 2.2-3.0 mi (3.5-4.8 km) Sisi Butte	Powerlines 1130 ft (344 m) 48-15 percent 0.9-1.3 mi (1.4-2.1 km) Aliso Canyon
Fuelbreak 0.02 acre (0.008 ha) 94 percent nondetect 0.6 mi (1.0 km) Pinnacles	Brush clearing 2.4 acres (1.0 ha) 58-09 percent 0.8-1.6 mi (1.3-2.6 km) Siskiyou Lake	Satellite dish 97 ft (30 m) 46-18 percent 1.1-2.2 mi (1.8-2.2 km) La Posta Road
Microwave tower 155 ft (471 m) 94 percent nondetect 1.0 mi (1.6 km)) Poleta Creek	Ski Area 2.9 acres (1.2 ha) 52-31 percent (combined) 5.2-7.3 mi (8.4-11.7 km) Bald Mountain	Headstones 0.06 acre (0.02ha) 43-02 percent 0.2-0.3 mi (0.3-0.5 km) Westside Cemetery
Clearcuts 0.7 acre (0.3 ha) 92 percent nondetect 2.2 mi (3.5 km) Black Mtn/Bannack	Bum 4.3 acres (1.7 ha) 45-19 percent 1.6-2.6 mi (2.6-4.2 km) Schultz Creek	Regeneration 25.0 acres (10.1 ha) 41-19 percent 3.6-5.1 mi (0.8-2.2 km) Silvertip/Clackamas
Regeneration * 90 percent nondetect 1.0 ml (1.6 km) Haugan Mountain	Trails 1159 ft (353 m) 39-06 percent (combined) 2.2-3.2 mi (3.5-5.1 km) White Mountains	Clearcut 0.6 acre (0.2 ha) 34-12 percent 0.5-1.4 mi$_l$ (0.8-22 km) Lick Creek
Brush, Clearing * 89 percent nondetect 0.3 mi (0.5 km) Steel Creek open	Regenerating clearcut 35.0 acres (14.2 ha) 36-10 percent 1.0-2.0 mi (1.6-3.2 km) Ave. of the Giants	Buildings 1.4 acres (0.6 ha) 25-08 percent 1.3-2.4 mi (2.1-3.9 km) Pickel Meadow
Abandon mines 1.1 acre (o.4 ha)) 89 percent nondetect 1.6 mi (2.6 km) Sampson Peak	Subdivision clearing 8.4 acres (3.4 ha) 33-12 percent 1.0-1.8 mi (1.6-2.9 km) Prather Meadow	Cuttings and roads 4.6 acres (1.9 ha) 24-06 percent 3.2-4.8 mi (5.1-7.7 km) Yellowjacket Ridge
Partial Cuttings 91.0 acre (36.8 ha) 88 percent nondetect 2.3 mi (3.7 km) Lake Como	Clearcuts 2.3 acres (0.9 ha) 31-13 percent 1.0- 1.5 mi (1.6-2.4 km) Mifflin Creek	Brush clearing 7.1 acres (2.9 ha) 16-03 percent 0.9-1.3 mi (1.4-2.1 km) Everitt Hill
Ski area (square) 11.7 acres (4.7 ha) 88 percent nondetect 2.7 mi (4.3 km) Timberline	Abandoned mines 3.6 acres (1.5 ha) 29-11 percent (combined) 1.6-2.7 mi (2.6-4.3 km) Lone Tree Creek	
VAGUE (like)	SENSUAL (like)	PURPOSEFUL

NOT DETECTED: (other than critical element seen)	DETECTED: (critical element seen, not identified)	IDENTIFIED: (critical element identified)
VAGUE (like)	SENSUAL (like)	PURPOSEFUL
Regenerating clearcut 1.2 acres (0.5 ha) 88 percent nondetect 0.3 m9i (0.5 km) Little Crater Lake	Clearcut 4.0 acres (1.6 ha) 27-10 percent (combined) 0.7-1.4 mi (1.1-2.2 km) Dry Creek	
Brush clearing * 87 percent nondetect 0.3 mi (0.5 km) Steel Creek upslope	Juniper clearing * 27-11 percent 1.2-2.0 mi (1.9-3.2 km) Church Hills/I-15	
Clearcuts 0.5 acre (1 2 ha) 87 percent nondetect 1.6 mi (2.6 km) Black Mtn/Badger	Regeneration * 26-16 percent 0.2-0.5 mi (0.3-0.8 km) Oak Grove/Clackamas	
Building 0.03 acre (0.01 ha) 85 percent nondetect 0.8 mi (1. 3 km) Kratka Ridge	Regeneration 3.6 acres (1.4 ha) 25-02 percent 1.5-2.1 mi (2.4-3.4 km) Suntop	
Regeneration * 83 percent nondetect 0,9 mi (1.4 km) Lost Creek	Juniper clearing * 22-10 percent (combined) 1.0-1.4 mi (1.6-2.2 km) Church Hills/WG.	
Clearcuts 6.5 acres (2.6 ha) 80 percent nondetect 3.1 mi (5.0 km) Whitman Creek	Abandoned mines 0.7 acre (0.3 ha) 21-04 percent (combined) 1.7-2.8 mi (2.7-4.5 km) Southern Belle	
Ski area 0.6 acres (0.2 ha) 78 percent nondetect 1.8 mi (2.9 km) Mammoth Mountain	Mine tailings 0.8 acre (0.3 ha) 19-01 percent 0.5-1.0 mi (0.8-1.6 km) Pine Creek	
Terracing 2.5 acres (1.0 ha) 76 percent nondetect 1.1 mi (1.8 km) Ward Mountain	Parallel roads 360 ft (110 m) 18-05 percent 1.8-2.2 mi (2.9-3.5 km) Death Valley Jet.	
Partial Cuttings * 70 percent nondetect 0.6 mi (1.0 km) Crestview	Mines 2.2 acres (0.9 ha) 18-08 percent (combined) 3.6-5.0 mi (5.8-8.0 km) Goose Peak	
Plantation 3.6 acres (1.5 ha) 64 percent nondetect 1.0 mi (1.6 km) McIntosh Well	Juniper clearing * 17-06 percent (combined) 2.0-3.3 mi (3.2-5.3 km) Church Hills/Holden	
VAGUE (like)	SENSUAL (like)	PURPOSEFUL

NOT DETECTED: (other than critical element seen)	DETECTED: (critical element seen, not identified)	IDENTIFIED: (critical element identified)
VAGUE (like)	SENSUAL (like)	PURPOSEFUL
Regenerating clearcuts 3.5 acres (1.4 ha) 47 percent nondetect 0.6 mi (1.0 km) Andrews Exp. Forest	Active mining 30.0 acres (12.1 ha) 16-06 percent (combined) 1.6-2.0 mi (2.6-3.2 km) Philadelphia Canyon	
	Regeneration * 13-01 percent 0.8-1.2 mi (1.3-1.9 km) Little Fall Creek	
	Brush clearing 4.5 acres (1.8 ha) 12-0 percent (combined) 3.9-6.5 mi (6.3-10.5 km) Black Fox Mtn.	
	Regenerating clearcuts * (no threshold) 53 percent (combined detection) 2.0 mi (3.2 km) Little Guard	
VAGUE (like)	SENSUAL (like)	PURPOSEFUL
NOT DETECTED: (other than critical element seen)	DETECTED: (critical element seen, not identified)	IDENTIFIED: (critical element identified)

Appendix E

Respondents' Opinions of Management and Quality

The following table lists opinions of respondents, in percent, about whether landscapes are managed or not, and the quality of any management detected for various management activities and natural landscapes. Symbols indicate the following:

Management:
- I = intensively
- M = moderately
- L = very little
- T = total management
- U = unmanaged
- R = no response

Quality:
- W = well done
- F = fair
- P = poor
- D = devastating
- R = no response

Subject	Miles	Management						Quality				
		I	M	L	T	U	R	W	F	P	D	R
Various management actions												
Mammoth Ski Area	1.8	9	18	24	60	22	16	47	16	7	3	26
	3.0	10	35	21	67	24	11	38	28	11	2	21
La Posta Satellite dish	1.1	13	37	34	84	13	3	14	37	35	6	8
Westside Cemetery	0.2	9	39	41	89	8	3	21	47	18	3	10
Death Valley roads	1.8	10	27	28	65	24	11	19	31	19	3	28
Frankish Road	1.4	17	28	34	80	8	12	6	26	36	14	19
	2.7	5	12	54	71	22	7	19	36	21	6	19
White Mountains trail	2.2	8	18	43	68	23	9	17	36	14	15	19
Mt. Wilson Observatory	7.5	2	5	39	46	44	11	34	26	6	2	33
Schultz Creek bum	1.6	26	48	14	87	6	7	10	43	30	10	8
Mining												
French Creek mines	0.5	16	29	39	83	11	6	9	36	30	15	11
	1.3	4	37	39	79	11	10	23	36	14	1	16
Lone Tree Creek mines	1.6	5	14	36	55	32	14	9	30	18	16	28
	6.2	16	47	24	88	6	6	32	42	14	2	10
Sampson Peak mines	3.2	9	25	29	62	22	16	23	30	16	1	30
Pine Creek tailings	0.5	10	29	26	64	24	11	31	32	7	7	23
Goose Peak mines	1.2	20	29	30	78	14	8	28	39	8	7	18
	2.5	8	44	23	75	8	16	27	42	8	0	23
Southern Belle mines	0.4	14	16	27	58	24	19	8	25	26	13	28
	1.7	5	31	28	63	24	13	14	41	10	2	32
Timber harvesting												
Sisi Butte clearcuts	2.2	44	24	12	80	9	10	22	22	26	14	16
	3.0	33	38	13	84	8	7	35	32	15	6	12
	5.2	25	29	18	72	10	18	29	29	12	4	27
	7.4	14	47	23	84	7	9	23	42	14	2	18
Lick Creek clearcut	0.5	17	49	24	90	1	9	24	39	24	3	9
	1.4	15	31	24	70	24	6	39	26	10	5	20
Beaver Creek clearcut	0.9	26	45	21	93	4	3	21	44	22	6	6
Black Mountain Bannack clearcut	2.9	26	24	25	74	18	8	28	24	19	15	15

continued

Subject	Miles	Management						Quality				
		I	M	L	T	U	R	W	F	P	D	R
Timber harvesting, continued												
Mifflin Creek	1.0	29	35	22	86	8	6	38	31	15	2	14
clearcuts	1.5	14	39	14	68	14	18	29	30	11	5	24
	2.0	24	33	23	80	8	11	38	29	12	3	18
	2.9	11	46	27	84	10	6	32	41	13	1	14
Whitman Creek	3.1	21	18	35	74	17	9	50	21	6	2	20
cuttings	5.2	16	33	33	82	8	10	35	37	11	0	17
	7.4	4	41	32	78	8	14	31	42	3	1	22
Deer Butte partial	0.3	61	21	12	94	1	5	13	22	46	15	5
cuttings	0.5	48	16	17	82	9	9	14	28	28	18	13
	0.8	31	29	17	76	7	16	16	23	28	13	21
Sleeping Child thinning	0.2	63	17	7	87	7	7	21	31	22	18	8
Forest regeneration												
Martin Creek	1.0	59	25	5	89	4	7	13	21	38	22	7
regenerating cuts	2.2	32	48	13	93	1	6	12	34	44	6	5
	3.2	23	42	15	80	15	5	16	37	33	5	9
Avenue of the Giants regeneration	1.0	20	32	23	74	15	11	31	27	26	4	13
Bad News Camp	0.8	24	33	16	74	20	7	9	38	25	12	16
regenerating cuts	1.3	26	35	18	79	13	8	34	30	19	5	12
Lost Creek fire	0.9	15	18	29	61	24	15	41	14	15	1	30
regeneration	1.5	25	43	17	85	3	12	49	26	9	0	17
Moon Pass regeneration	1.7	32	45	15	91	2	7	10	45	36	3	7
Range type conversions												
Horse Mountain	1.5	34	38	17	90	1	9	13	28	38	14	8
brush clearing	2.1	16	37	24	77	7	16	19	30	28	3	21
	3.0	21	23	26	70	19	11	10	22	38	8	22
Everitt brush clearing	1.3	13	52	19	84	3	13	20	46	19	2	13
Church Hills/Wild	0.5	9	22	35	66	29	5	14	26	28	8	24
Goose juniper clearing	1.0	18	22	18	58	28	14	24	27	11	3	34
	1.4	5	23	32	60	26	14	20	27	16	2	35
	3.3	2	24	31	57	26	18	29	37	6	0	28
Church Hills/Holden	2.0	33	31	10	73	14	13	16	31	27	8	19
juniper clearing	3.3	38	33	13	84	5	12	31	47	10	0	12
Steel Creek/up slope clearing	1.0	14	42	22	78	10	11	30	32	16	1	21
Natural landscapes (unmanaged)												
Apache Canyon dry	2.1	9	24	31	76	24	12	17	32	18	3	30
river		11	29	27	67	21	12	33	25	11	3	28
	7.1	7	28	38	72	19	9	33	29	19	2	17
Sardine Falls	0.5	9	12	20	42	51	7	44	16	6	0	33
	1.0	15	30	23	68	25	8	45	22	6	0	28
Reynolds Creek	0.3	14	28	17	59	28	13	31	22	13	0	33
forest	0.6	21	33	14	68	26	6	46	22	5	2	24
Apache Canyon erosion	1.6	10	23	28	60	31	9	30	21	24	6	20
Craters of Moon	0.5	6	13	32	50	40	9	22	24	14	7	33
lava flow	1.0	2	11	32	45	36	19	19	24	22	2	34
Cuyamaca Rancho	1.2	21	33	23	76	16	8	26	16	30	12	17
meadow	1.9	18	19	28	65	27	9	17	26	31	7	20
	2.7	7	15	28	50	37	14	30	23	10	5	32

Glossary

The following are model terms used to describe landscapes:

Censorable
Defines landscapes that are sufficiently legible to evoke negative emotional reactions on the part of observers who dislike what they see; observers might write letters condemning the actions seen.

Chaotic
Used to describe the condition when people find a landscape to be illegible (cannot assign a meaning to it) and they dislike it (Lee 1976); wholly confused or disordered perceptions; see indistinct.

Commendable
Defines landscapes that are sufficiently legible to evoke positive emotional reactions on the part of observers who like what is seen; observers might write letters praising the actions seen.

Critical elements
Objects in landscapes (natural or man-made) which, for whatever reason, attract an observer's attention. In this study, critical elements were any natural landscape component of an unmanaged (natural) landscape and objects or actions in a managed landscape such as timber harvesting, mining, roads, or buildings that were important to an observer.

Indistinct
As with chaotic, describes landscapes that are illegible to observers, that is, they detect critical elements but can not identify them and do not like the scene; not clearly marked or defined; not clearly distinguishable or perceptible to observers; preferred for use in the Threshold Meaning Model because it is more descriptive of observer perceptions than is "chaotic."

Legibility
A concept, originally defined for cities, referring to the ease with which inhabitants recognized city parts and organized them into coherent patterns (Lynch 1960); used herein to describe the meaning or what people can decipher about a landscape by observing its features (Lee 1976). Landscapes may be legible or illegible.

Obscure
Defines landscapes that are disliked and illegible to observers. They cannot detect critical elements and may not know why they dislike such scenes.

Purposeful
Defines landscapes that observers like and find legible (Lee 1976); observers detected critical elements, could identify them, and liked the scene.

Sensual
Defines landscapes that observers like and find illegible (Lee 1976); observers detect critical elements, but can not identify them, yet like the scene.

Unacceptable
Defines landscapes that are legible but disliked by observers (Lee 1976); observers detected critical elements, could identify them, but did not like what they saw.

Vague
Defines landscapes that are liked and illegible to observers, in which they cannot detect critical elements and may not know why they like such scenes.

Observer
A person, with regard to visual resources, who sees, watches, perceives, or notices components of landscapes as well as the influence on the components of various natural or man-made occurrences.

Trained observer
A person whose observational skills have been enhanced by specialized knowledge and experience to permit their attention to be more precisely focused (to be visually sensitized) and thereby more complete and accurate in their perceptions of particular aspects of a visual scene (Vernon 1968).

Uninformed observer
A person who has not been provided standards for assessing landscape scenes, i.e., not told that management actions are present.

Untrained observer
A person whose observational skills have not been enhanced by specialized training and experience. Such a person may not see particular components of landscapes, not even when their attention is drawn to them.

Threshold
"The minimal amount of information required for the accomplishment of a perceptual task." (Dember 1960).

Detection threshold
The point at which something is first seen by an observer, but not identified; something is seen, but not enough information is transmitted to allow it to be identified.

Identification threshold
The point at which minimal information is available to permit recognition without a standard provided to aid discrimination; an observer is not told that a management action is present.

Reaction threshold
A presumed point at which the visual influence of an identified action is sufficient to cause an observer to respond to what was seen in some emotive manner.

Recognition threshold
The point at which minimal information is available to permit recognition by comparison with a standard provided to aid discrimination; an observer is told that a management action is present.

Recovery-time thresholds
Thresholds that are defined by stages of plant succession when growth is sufficient to screen objects or mask changes. A "loss of identification threshold" is described when vegetative development sufficiently reduces discrimination so that an observer can detect but no longer identify an object or action. And, a "loss of detection threshold" is described when vegetative cover finally has developed sufficiently to prevent an observer from detecting an object or action.

References

Anderson, Lee; Galliano, Steve; Neville, Bob; and others. 1976. **VAC: visual absorption capability.** San Francisco, CA: California Region, U.S. Department of Agriculture, Forest Service; 25 p.

Castaneda, Carlos. 1971. **A separate reality.** New York: Simon and Schuster; 317 p.

Clark, Roger N., Project Leader. 6 September 1983. Pacific Northwest Research Station, Forest Service, U.S. Department of Agriculture, Seattle, WA. [Personal discussion].

Daniel, Terry C.; Boster, Ron S. 1976. **Measuring landscape esthetics: the scenic beauty estimation method.** Research Paper RM-167. Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 66 p.

Dember, William N. 1960. **The psychology of perception.** San Francisco, CA: Holt, Rinehard and Winston; 402 p.

Driscoll, Edward C., Jr.; Gray, Brian A.; Blair, William G.E.; Ady, John F. 1976. **Measuring the visibility of high voltage transmission facilities in the Pacific Northwest.** Final report to the Bonneville Power Administration, United States Department of Interior. Contract 14.03.6017N. Seattle, WA: Jones and Jones; 55 p.

Franz, M. -L. von. 1964. **Science and the unconscious.** In: Carl G. Jung and others. 1964. Man and His Symbols. Garden City, NY: Doubleday and Company, Inc.; 304-310.

Gibson, James P. 1950. **The perception of the visual world.** Boston, MA: Houghton Mifflin Co. (The Riverside Press, Cambridge); 235 p.

Hampe, Gary D. 1988. **The influence of sociocultural factors upon scenic preferences.** In: Noe, Francis P.; Hammitt, William E. Visual preferences of travelers along the Blue Ridge Parkway. Scientific Monograph Series No. 18. Washington, DC: National Park Service, U.S. Department of the Interior; 202 p.

Herzog, Thomas R. 1987. **A cognitive analysis of preference for natural environments: mountains, canyons, and deserts.** Landscape Journal 6(2):140-152.

Jung, Carl G.; Henderson, Joseph L.; Franz, M. -L. von.; Jaffe, Anielia. 1964. **Man and his symbols.** Garden City, NY: Doubleday and Company, Inc.; 320 p.

Kaplan, Rachel. 1975. **Some methods and strategies in the prediction of preference..** In: Zube, Ervin H.; Brush, Robert 0.; Fabos, Julius Gy. Landscape Assessment. Stroudsburg, PA: Dowden, Hutchinson & Ross, Inc.; 118-129.

Kaplan, Rachel. 1979. **Visual resources and the public: An empirical approach.** In: Proceedings of Our National Landscape, A Conference on Applied Techniques for Analysis and Management of the Visual Resource, Incline Village, NV, April 23-25, 1979; Gen. Tech. Rep. PSW-35. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 209-216.

Kaplan, Stephen. 1975. **An informal model for the prediction of preference.** In: Zube, Ervin H.; Brush, Robert 0.; Fabos, Julius Gy. Landscape Assessment. Stroudsburg, PA: Dowden, Hutchinson & Ross, Inc.; 92-101.

Kaplan, Stephen. 1987. **Aesthetics, affect, and cognition: environmental preference from an evolutionary perspective.** Environment and Behavior 19(1):3-32.

Koffka, Kurt. 1963. **Principles of Gestalt psychology.** New York: Harcourt, Brace and World, Inc.; 720 p.

Laughlin, Nora Alix; Garcia, Margot W. 1986. **Attitudes of landscape architects in the USDA Forest Service toward the visual management system.** Landscape Journal 5(2):135-139.

Lee, Robert G. 1976. **Research on the human sensitivity level portion U.S. Forest Service visual management system, final report.** Report submitted to the Pacific Southwest Forest and Range Experiment Station as part of a cooperative agreement with the University of California, Berkeley, CA: 58 p.

Lynch, Kevin. 1960. **The image of the city.** Cambridge, MA: The M.I.T. Press & Harvard University Press; 194 p.

Palmer, James F. 20 July 1989. College of Environmental Science and Forestry, State University of New York, Syracuse, NY. [Letter to Arthur W. Magill]. 2 leaves.

Palmer, James F.; Alonso, Santiago; Dong-hee, Koh; Gury, Jacques; Hernandez, Yezmin; Ohno, Ryuzo; Oneto, Gilberto; Pogacnik, Andrej; Smardon, Richard. 1988. **Cross-cultural assessment of visual impact simulations.** Syracuse, NY: College of Environmental Science and Forestry, State University of New York; 36 p.

Penning-Rowsell, Edmund C. 1979. **The social value of English landscapes.** In: Proceedings of Our National Landscape, A Conference on Applied Techniques for Analysis and Management of the Visual Resource; Incline Village, NV: 23-25 April 1979; Gen. Tech. Rep. PSW-35. Berkeley, CA: Pacific Southwest Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; 249-255.

Schroeder, Herbert W. 1988. **The significance of landscapes.** Second Symposium on Social Science in Resource Management, University of Illinois, Urbana-Champaign, IL, June 6-9, 1988. Chicago, IL: North Central Forest Experiment Station, Forest Service, U.S. Department of Agriculture; 5 p.

Sewell, W.R.D. 1971. **Environmental perceptions and attitudes of engineers and public health officials.** Environment and Behavior 3(1): 23-59.

Thayer, Robert L.; Freeman, Carla M. 1987. **Altamont: public perceptions of a wind energy landscape**. Landscape and Urban Planning 14(1987): 379-398.

Tuan, Yi-Fu. 1974. **Topophilia: a study of environmental perception, attitudes and values.** Englewood Cliffs, NJ: Prentice-Hall, Inc.; 260 p.

U.S. Department of Agriculture, Forest Service. 1974. **National Forest Landscape Management, Volume 2, Chapter 1, The Visual Management System.** Agriculture Handbook 462, Washington, DC: U.S. Government Printing Office, 47 p.

U.S. Department of the Interior, Bureau of Land Management. 1975. **Visual Resource Management.** BLM Manual, Washington, DC.

Vernon, M. D. 1968. **The psychology of perception.** Baltimore, MD: Penguin Books; 265 p.

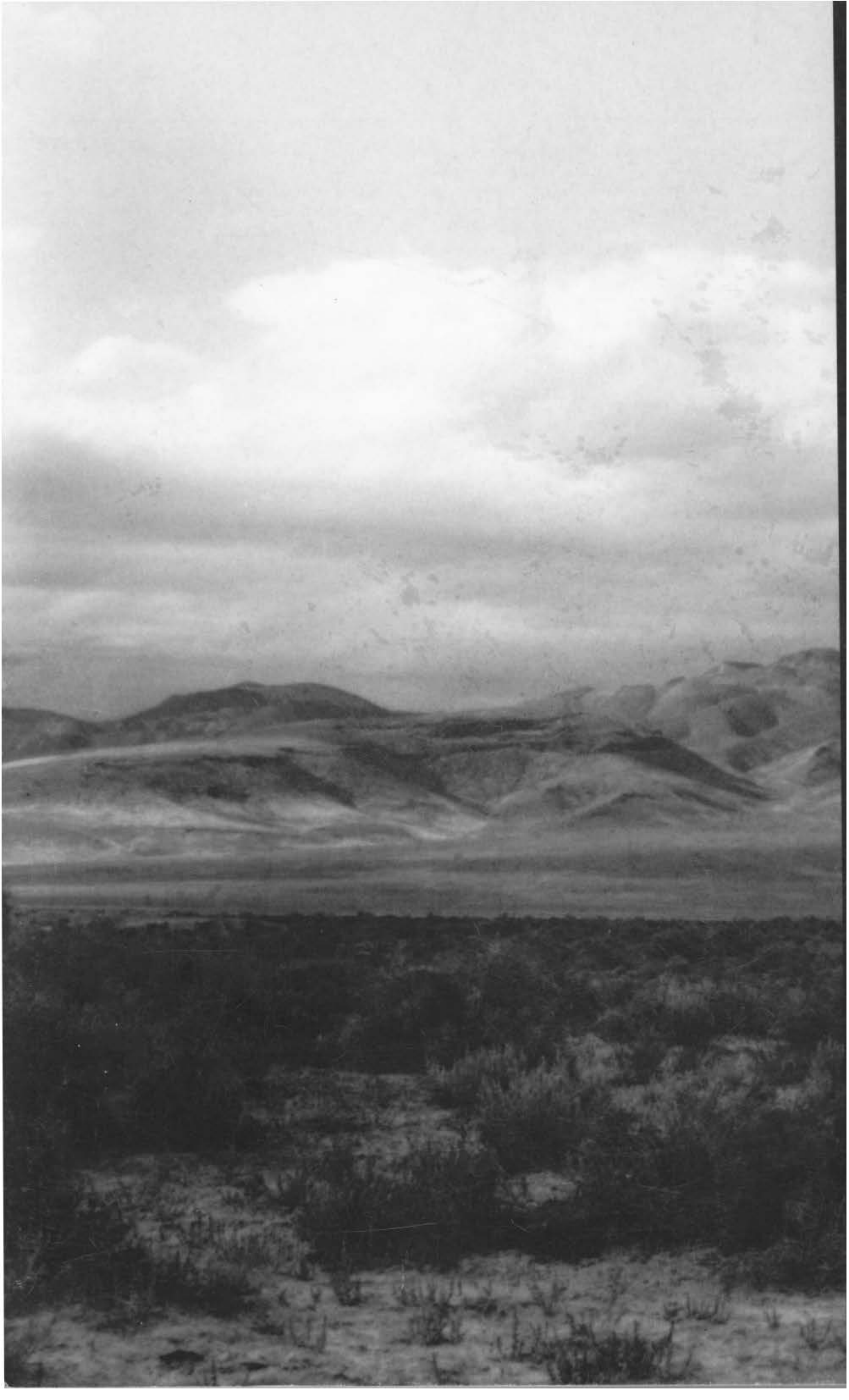
Zube, Ervin H.; Simcox, David E.; Law, Charles S. 1987. **Perceptual landscape simulations: history and prospect.** Landscape Journal 6(1): 62-80.

The Forest Service, U.S. Department of Agriculture, is responsible for Federal leadership in forestry. It carries out this role through four main activities:

- Protection and management of resources on 191 million acres of National Forest System lands
- Cooperation with State and local governments, forest industries, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands
- Participation with other agencies in human resource and community assistance programs to improve living conditions in rural areas
- Research on all aspects of forestry, rangeland management, and forest resources utilization.

The Pacific Southwest Research Station

- Represents the research branch of the Forest Service in California, Hawaii, American Samoa and the western Pacific.



Research Paper PSW—203

Assessing Public Concern for Landscape Quality: A Potential Model to Identify Visual Thresholds